

American Artisan and Hardware A Record

Sheet Metal - Roofing - Warm Air Furnaces - Stoves

Vol 93. No. 1

CHICAGO, JANUARY 1, 1927.

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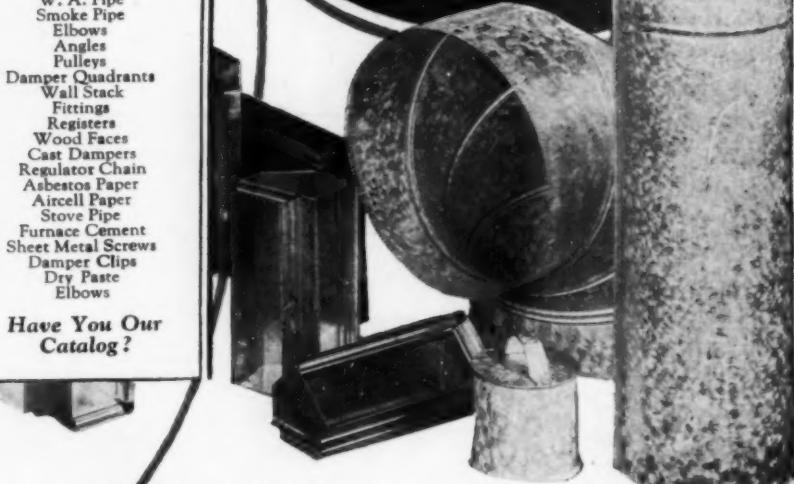
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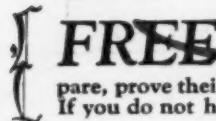
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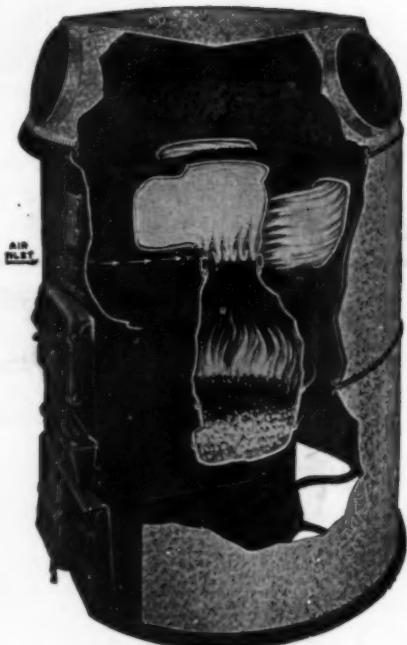
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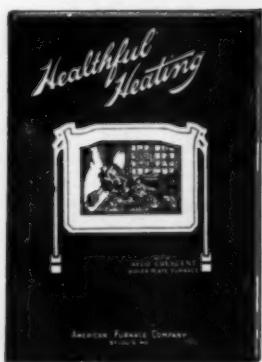
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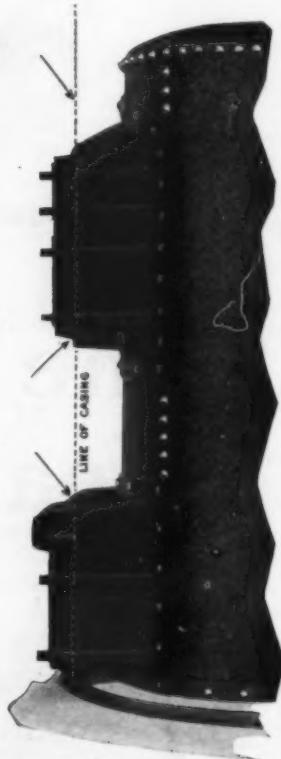
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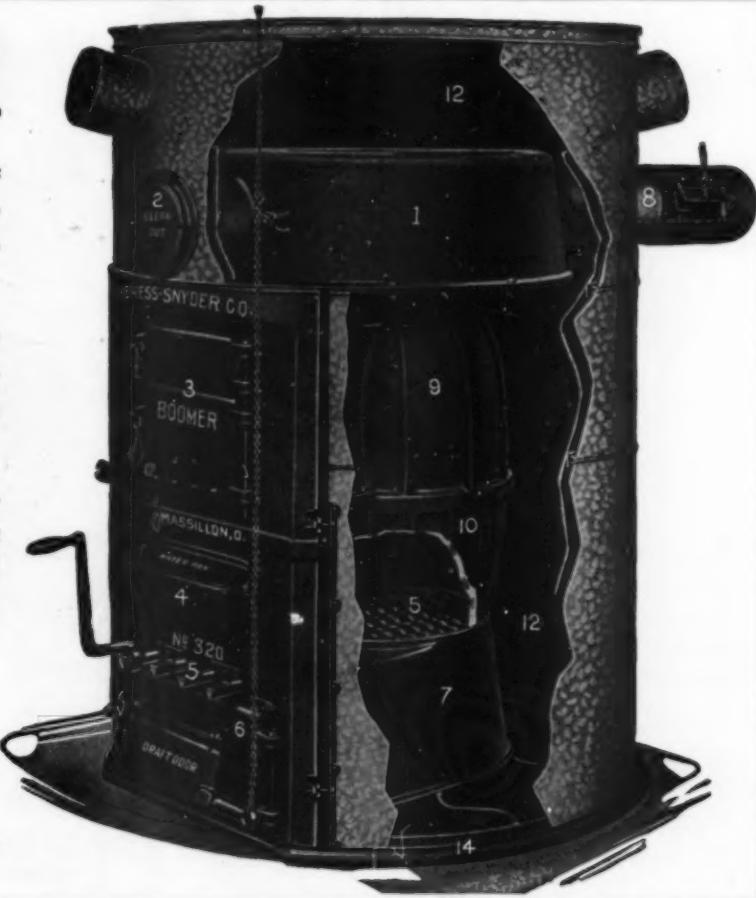
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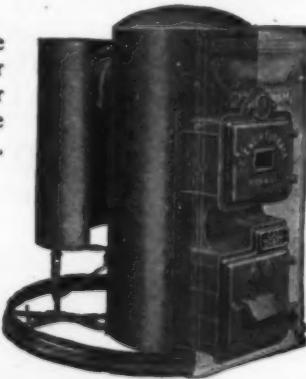
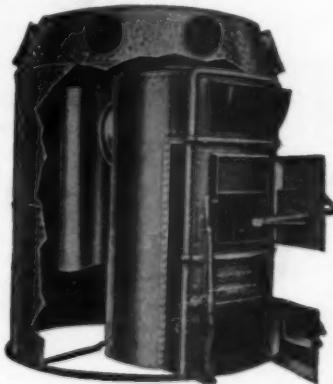
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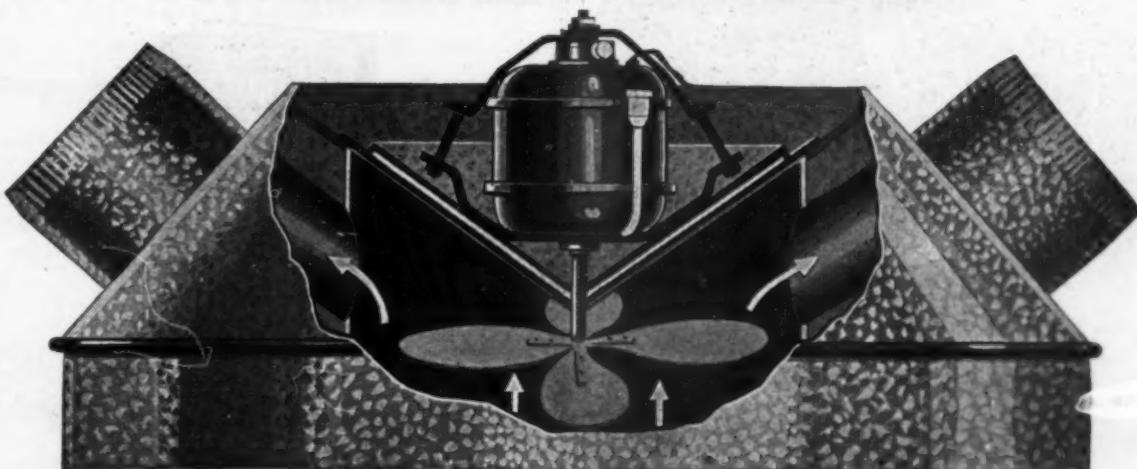
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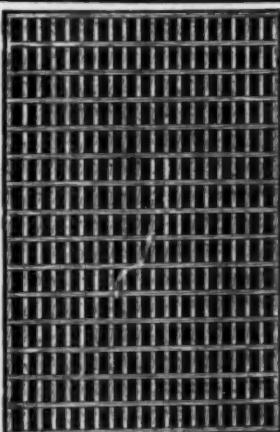
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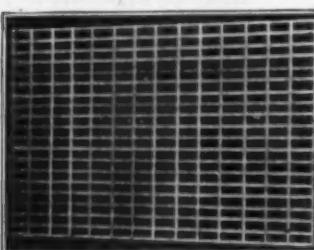
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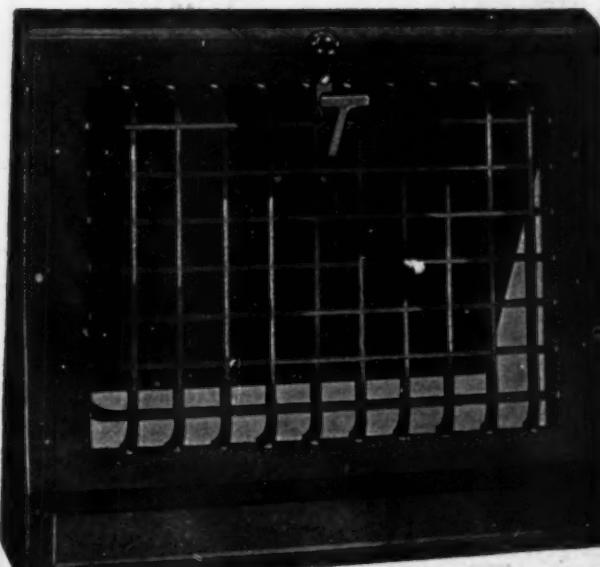
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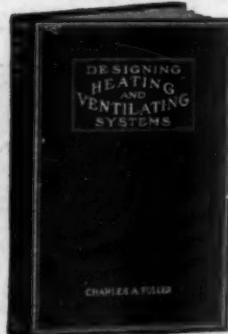
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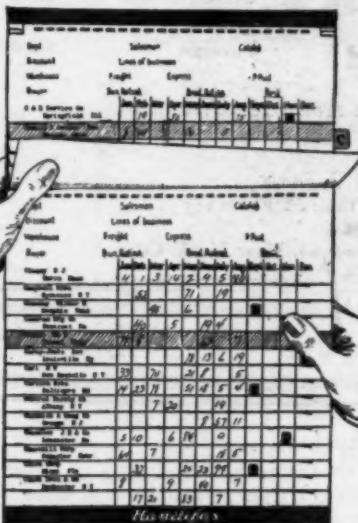
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AN ACHIEVEMENT

An explanatory note regarding service to readers of AMERICAN ARTISAN. This paper is now nearing the completion of a half century of service. For almost fifty years it has catered to the needs of the men in the industries which it represents. At no time during its long and successful career has AMERICAN ARTISAN been in a better position to render complete, adequate service to its readers than it is today. In addition to the matter contained in our regular weekly publication, we maintain Service Departments for the use of our readers. If you have a problem to solve, we courteously invite you to submit it to us for solution. In what better way can we learn of your problems than from you direct?

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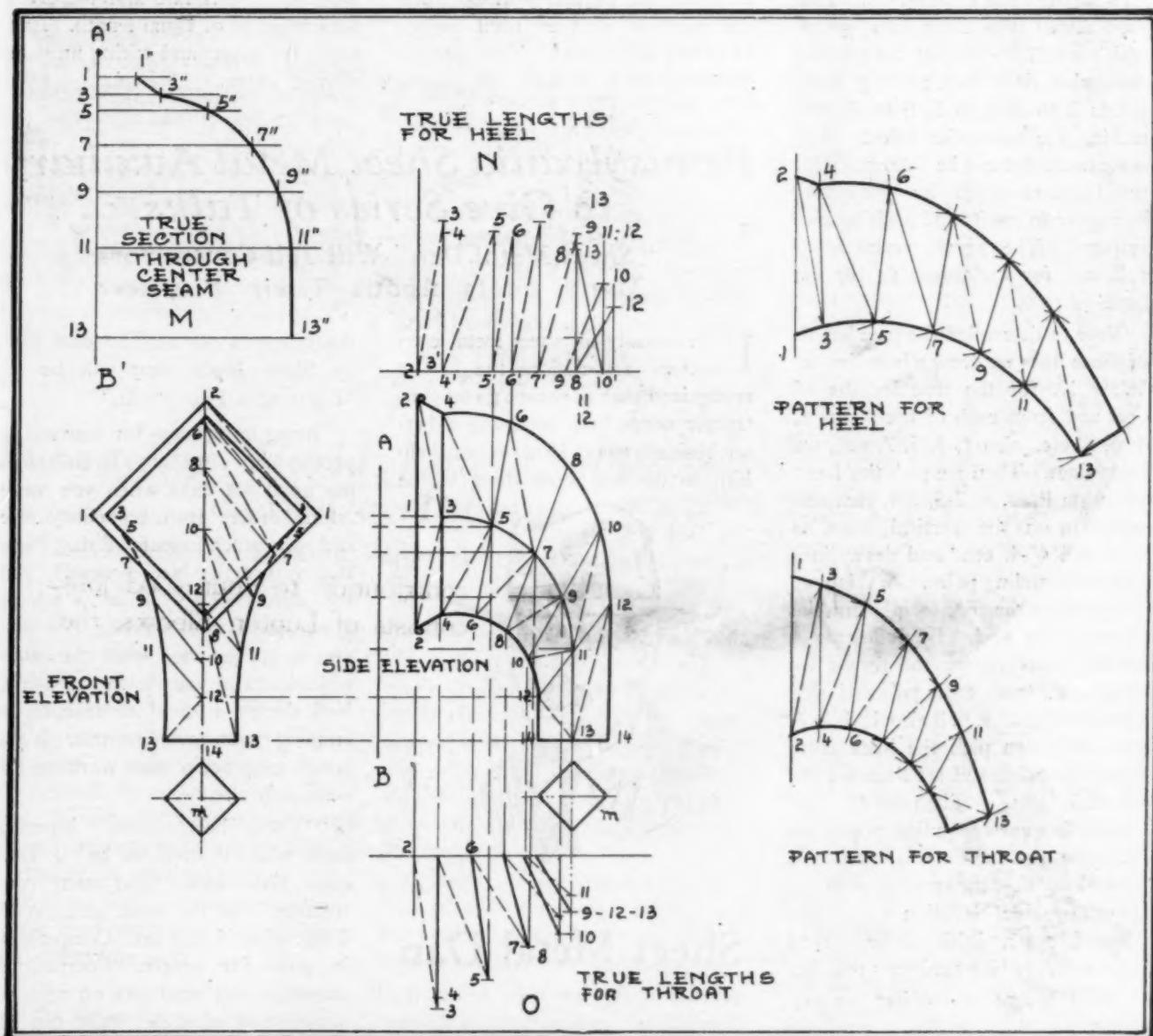
American Artisan and Hardware Record



Vol. 93.

CHICAGO, JANUARY 1, 1927.

No. 1.



Patterns for Radio Horn

Pattern For a Radio Horn

By O. W. KOTHE, Principal St. Louis Technical Institute

RECENTLY a man from a western state sent in a sketch of the radio horn we wish to make and which is quite similar to the one we prepared quite a while ago. The bell is square and run in a diagonal position toward the base. Horns of

this design will never be popular, because of the sharp corners and not enough curvature to the bell as well as the body in general, but they may serve for individual purposes as well as any other horn made of metal.

The first thing is to draw a side

elevation working in the outline of the heel and throat to the curvature desired in connection with the bell and the base. Next we draw the front elevation, giving the bell the diagonal position, and then from the corners 1 we sketch the side lines

1-13 free handed. When this line is once put in to suit your fancy then it becomes a fixed line and the rest of the work is built to it. Next divide the heel and throat of side elevation into equal parts at least for the curves and join with lines to pass through the center 1-13. This then divide the horn into gores, which enables drawing the dotted triangular lines reaching from points 2 to 3, 4 to 5, 6 to 7, etc., making the triangular effect. The same treatment can be followed with the front elevation by projecting lines over so points and position correspond. The same treatment is followed for the throat as for the heel.

Now to determine the true length of these lines we draw a base line, as below N, for the true lengths of heel and from each of the points 2, 4, 6, 8, etc., also 1, 3, 5, 7, etc., we erect lines. Then we pick the front elevation lines, as 2-3, 3-4, etc., and set them on the vertical lines, as 3'-3 and 4'-4, etc., and draw lines to corresponding point. In this way we produce the true lengths for the segment for heel. By following a similar measure for the throat we drop lines from each point of side elevation, as 2, 4, 6, 8 also 1, 3, 5, 7, etc., and then pick the lines from front elevation and set them on the vertical lines in diagram O. By connecting corresponding points we have the true lengths as shown. We should say that the sections m-m for front or side elevation shows the base of horn and this can be worked into a square to round very readily.

Now before developing the patterns, we must develop a true section through the center seam 1-13. For this we project all the points, as 1, 3, 5, 7, etc., to 13 onto the line A-B. We transfer this line to the position A'-B' and draw horizontal lines, after which we erect lines from each point in front elevation, as 1, 3, 5, 7, etc., to intersect lines as at 1", 3", 5", 7", etc. Sketch a line through these points and you have the true section or girth line along the center seam.

Now to set out the pattern we draw any line, as 1-2 equal to front

elevation and for the heel we use the girth from the heel of side elevation while for the throat spaces, as 1, 3, 5, 7, etc., we use the girth spaces 1", 3", 5", 7", etc., from section M. Then with the aid of the true lengths we develop the pattern in the triangular fashion working from one point to another until points 13-14 are established. This enables sketching lines through all points

where arcs cross and the pattern is finished. The same process may be applied for the throat pattern, only using the spaces 2-4-6 of throat in side elevation and the spaces 1", 3", 5", etc., from true section M. Observe these two patterns must fit together in this line and therefore both must be of equal length. Any edges for seams and wiring must be allowed extra.

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Sheet Metal Dan

question which has been before the associations' executive boards for solution.

The Distributors' and Salesmen's Auxiliary of the Sheet Metal Contractors' Association of Pennsylvania has evolved a plan whereby it will send out to its membership at regular intervals a short sketchy talk on topics of great interest to the dealers. These messages are between the dealer and Sheet Metal Dan, the personification of the lecturer who gives the talk.

The following is the first talk sent out from Secretary W. F.

Angermyer's office. The next talk by Sheet Metal Dan will be on "Figuring a Fair Profit."

"Being in business for yourself is pretty fine, after all. It isn't like the good old days when you were taking orders from somebody else and were stuck indoors all day. Now that you're the boss yourself, you see more people, you know what's going on in the building line and you've got an idea what the other contractors in your town are doing. Yes, there's a lot of satisfaction in running your own business. It's a whole heap better than working for somebody else."

"The sheet metal business isn't what it used to be," I hear some folks kick. "Too many contractors after the same jobs." Well, I say, what if they are? Competition is good for people. Competition shows a man what he's up against, shows him what he really can do when he has to, and gives him confidence in himself in a way that having things softer never could do.

"For one thing, when the shoe pinches, a man can always figure out better ways to cut down his expenses. Saving on the cost of jobs is a direct way to make the margins of profit a little bigger. And a little bit of saving on expenses makes a whole lot of difference in a man's financial position—gives him more elbow room right away. Cutting down expenses has as big an effect

in relieving the pinch as a sizable piece of new business would have.

"A smart way to keep down costs is to see that all the men are working all the time. When a man is idle—when he's waiting to begin on the next job, for instance—he's running up expenses. You're paying for something you aren't getting. You're really paying him to work, not to be idle. I've heard of shops where the men lost as much as one hour of idle time out of every twenty. That's a lot of idle hours lost in a week. A twentieth of the payroll saved for the boss every week would make a handsome profit for lots of contractors I know.

"I never could see this waiting a long time for your money after a

job was finished, either. The longer the other guy waits to pay you the harder it is for him to dig up. He gets used to having your unpaid bill around and all the time he's using your money in his business. A fellow needs all the capital he can get in his own business and that means that he can't afford to have a lot of people owing him. Prompt collections are good for everybody, but most of all for the sheet metal contractor.

"I grant it isn't easy to run a sheet metal business nowadays. It takes plenty of ability. But I'm here to say a kind word for the grief in this game because it makes a man scrap and show what he's got under his hat."

weeks the franc has appreciated so rapidly as to leave the cost of living behind, and manufacturers have been unable to readjust conditions in the shape of wages and supplies. Thus it is that French industry as a whole is commencing to taste the aftermath of inflation, and are faced with the same real difficulties that have beset the other nations in their respective periods of deflation.

In the case of zinc, France finds itself unable to import Belgian zinc as hitherto, and the tonnage in question is consequently being offered in England to the embarrassment of the London market. While in January it may be possible for Great Britain to absorb this extra quantity, its pressure on the market just now is naturally a depressing influence.

Even in Germany, where there has been steady progress in the metal and other industries for many months, there is something of a seasonal let-up, and traders evince no desire to carry stocks of the non-ferrous metals.

Today, more than at any time since the war, the London Metal Exchange is regarded by all nations as the key to the base-metal situation, and London quotations govern world market prices.

The safety valve in the case of zinc lies in the fact that there is comparatively little profit in the current selling price vis-a-vis cost

The outlook for 1927 can more aptly be covered in my next survey as at 1st of January, and I will content myself today by stating that I am not at all pessimistic as to the of production. prospects for the zinc industry over next year.

My estimate of stocks of slab zinc as at December 1st, 1926, is as follows:

	Metric Tons
United States	13,200
Canada	2,300
Australia (including unsold shipments afloat) ..	2,300
Germany-Poland	7,500
Belgium	3,200
France	1,400
Great Britain	1,000
Scandinavia	200
Far East	500
Elsewhere	1,500
 Total	 33,100

High Welding Temperatures Defy Imagination

Welder Has Four Processes at His Disposal

By WALTER W. PETRY

TEMPERATURES as high as those that melted the planets are now being produced for industrial purposes. Metals and rocks melt at temperatures about fifteen times higher than the boiling point of water or 3,000 to 4,000 degrees Fahrenheit. But the electric arc welder produces temperatures about thirty to forty times higher than the boiling point of water, or from 6,300 up to 9,400 degrees Fahrenheit—high enough to gasify metals if not properly applied. The welder can produce this almost unimaginable heat for any length of time and concentrate it on any desired spot. It makes possible the fusing and building up of nearly all kinds of metals. As a result, welding has brought about many industrial improvements and saved many repairable castings, pipe, tanks, boilers, machines, and so on.

An electric discharge as hot as this produces a brilliant, blinding light containing dangerous ultraviolet rays. Special glasses and helmets have been devised which protect welders' eyes from injury.

These glasses also serve to bring out the details of the weld.

Welding has been so perfected in all its details that it is available for almost everyone nowadays. Portable welding machines have made it possible for the welder to carry his equipment anywhere. He may be seen in the middle of a busy thoroughfare, welding street car rails, or in the hold of a ship, or inside of a boiler, or high up on a structural steel building.

Four Processes

He can weld almost any kind of metals because he has four processes at his disposal. The acetylene gas process of welding is one of the most widely used because of the ease with which it is controlled. This process makes it possible to weld any metallic substance known.

The carbon arc process makes use of a pointed carbon electrode as the negative pole and the metal to be welded as the positive pole. The carbon is touched to the metal and then drawn away far enough to give an electric discharge from the metal to the electrode. This is the process

that produces the temperatures of 9,400 degrees. When it is desired to repair blowholes, shrinkage cracks, and sand holes, the carbon arc is first played over the surface to pre-heat the metal and to flush out all sand and foreign matter. Then the operator feeds in the fill-

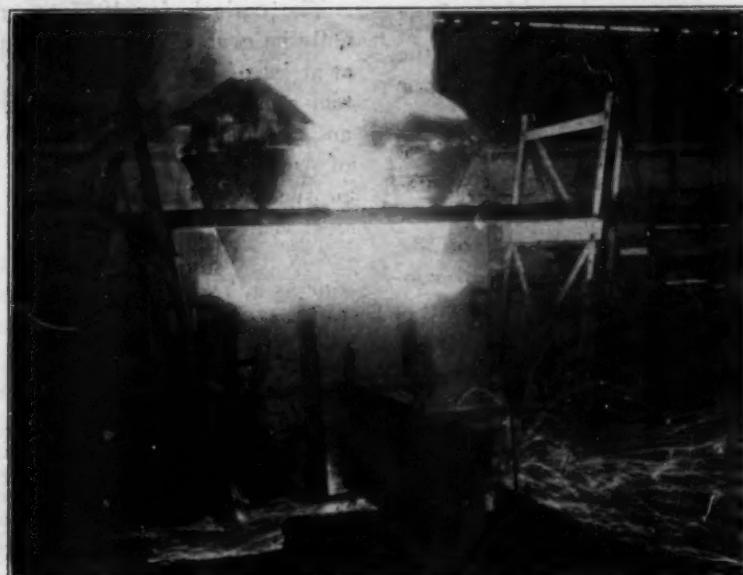


Welding requires great skill

ing metal as the parent metal melts. He uses iron welding rods especially made for this purpose. Foundries often save castings which have shown defects and after welding them, send them to the user. Such repaired castings are considered as good as new.

Resistance welding or spot welding differs from the other processes in that a copper electrode is in direct contact with the metal to be welded. The heat is generated by the metal's resistance as the current passes through it. No electric arc is used as in the other electric methods.

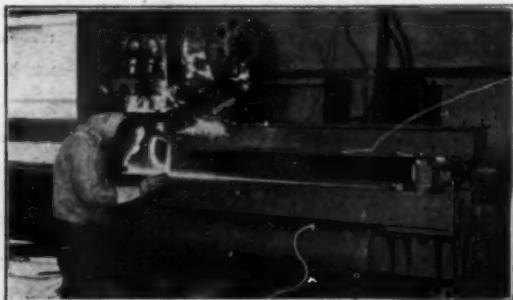
In the metallic electrode process, the electrode is a small metal wire which gradually melts itself away and furnishes metal for filling. This process is used for about ninety per cent of all electric arc welding work. The electrode spreads the heat over a very small area, so the operator can deposit the metal very accurately on edges of sheets and plates. Since the metal rod is the positive electrode, the molten metal is carried by the arc to the work. Overhead welding is therefore possible with this process.



Set-up for thermite welding, showing metal being poured

because the metal can be carried up and deposited in place.

Thermit is the name applied to another process of welding in which great heat is developed by chemical



Uniformly sound welds assured by the automatic method

reaction. The "Plain Thermit" is made up of iron oxide and granulated aluminum. This method usually requires a mold built up around the parts to be joined and in most cases requires preheating of those parts.

Welding should not be considered a "patching" or "doctoring" process. Defective parts are melted and cast again in solid iron. Welded parts become an integral part of the casting, and when the work is carefully done, they machine and finish perfectly.

Automatic Welding

The human element in welding tanks, pipe, and the like, can be partly eliminated by the use of the automatic arc welder. The automatic "welding head" carrying a roll of welding wire is mounted on a traveling carriage. As it traverses the seam to be welded, it deposits a metallic bond evenly and smoothly. Such welds are often stronger than the surrounding metal, as proved by numerous tests. They give assurance that joints will not easily break apart or be worn out by abrasion (in the case of dredge pipe).

With the automatic welder, the actual welding speed is two to ten times faster than hand welding, and the quality of the finished weld is better. Of course, the automatic welder can never entirely replace the hand operated carbon arc process, the acetylene process, or the

metal electrode process because there are many special jobs requiring all of these. For example, when laying a pipe line, the work of hand welding the joints is often done right on the location. It has been found that this gives a more permanent joint in pipe than the couplings sometimes used. It gives a strength equal to solid pipe and helps to prevent leaks at the joints.

Pure Iron Welding Rods

The question of the best metal to use for welding rods has been given much study. Some welding rods of pure iron are enclosed in a steel alloy shell designed to resist the heat slightly longer than the iron and thus somewhat protect the core from oxidation. But any steel containing more than 0.5 per cent of carbon is subject to "burning." Great care should be taken to prevent "burning" because it affects the character of the weld. Furthermore, the gases and other impurities in steel bubble and im-

because it reduces bubbling. Purer iron flows smoothly and evenly at welding temperatures because of its purity, uniformity and degasification. Commercially pure iron such as "Armco" Ingot Iron is virtually free from impurities and gases and therefore is considered ideal for welding. Even when welding on steel, purer iron is considered to be best for welding rods.

The use of purer iron, the invention of the automatic welder, and the development of the portable welding outfit have been some of the decisive steps that have helped to perfect welding science. It has become highly valuable because it saves industry millions of dollars every year.

Reprinted from *Pure Iron Era*.

Canvass and Special Demonstration Sales Not Popular With Installer

The warm air furnace installers are not exactly thrilled to tears over the canvass and special demonstration method of creating sales.

Eighty per cent of those who



Section of blooming mill rack showing fracture to be welded and several finished thermit welds

pair the weld. So the purer the electrode iron, the better will be the welding qualities, and the solder will be the weld.

The use of purer iron welding rods eliminates most of the difficulties encountered when steel is used and gives better results. Purified iron is heated in the open hearth furnace for about four hours longer than steel is heated. This extra purification reduces the welder's troubles

were asked whether they employed this method replied in the negative.

The curious thing about it is that the remaining 20 per cent who said they had used this method were very enthusiastic about it. In only one case did the installer who had tried that method say the results were doubtful.

Are the installers overlooking a bet here, or are those 20 per cent especially favored?

**Michigan Sheet Metal
Board of Directors Adopts
Sliding Scale on Dues**

The Board of Directors held their second meeting of the year at the Hotel Olds, Lansing, Michigan, on Monday afternoon, December 13.

The members of the Board present were: Wm. P. Sullivan, A. F. Martin, H. E. Rhodes, F. E. Ederle, F. B. Harrington, A. J. Shouldice, Wm. Busch, Geo. Lubahn and H. F. Brundage.

The minutes of the previous meeting were read, corrected and approved. A report of the Budget Committee composed of A. J. Shouldice and F. B. Harrington was heard. This report recommended that a sliding scale of dues be adopted, this being based on the volume of business done by each concern, i. e.:

Firms with less than \$50,000 volume, \$10.00.

Firms with less than \$100,000 volume, \$25.00.

Firms with volume of \$100,000 and over, \$40.00.

It was also recommended that all insurance commissions received by the secretary be turned over to the general association fund. Following this report a motion that the plan be accepted, was made, supported, and the motion carried.

Application from Behler-Young Company for a franchise to handle Michigan Standard Products in Grand Rapids territory was considered. A motion was made and supported that this franchise be granted. The motion carried.

A general discussion of the sale and the progress being made with Michigan Standard galvanized iron proved without a doubt that nothing can stop this product from going across bigger every year. A motion was made and supported that the J. M. & L. A. Osborn Company be authorized to aggressively sell Michigan Standard in any territory in the state. The motion was carried.

The support being given by the jobbers in Michigan, with one or two exceptions, has not been 100

per cent and is the reason for adopting this new policy.

There being no further business to be considered the meeting was adjourned until the 1927 Convention, March 1, 2 and 3, Grand Rapids, Michigan.

**Edwin L. Seabrook Now
Secretary Norristown, Penn-
sylvania, Chamber of Commerce**

For the information of the friends of Mr. Edwin L. Seabrook, formerly secretary of the National Association of Sheet Metal Contractors, Mr. Seabrook is now secretary of the Norristown, Pennsylvania, Chamber of Commerce. Mr. Seabrook is also president of the Board of Education of Camden, New Jersey, his home town.

**N. & G. Taylor Company, Inc.,
Have Moved Into Liberty
Trust Bldg., Philadelphia**

The N. & G. Taylor Company, Inc., have made the announcement that their offices have been moved to the sixteenth floor of the Liberty Trust Building, Broad and Arch Street, Philadelphia, Pennsylvania



Gas Warm Air Furnaces.

From Campbell Heating Company, 367 Hargrave street, Winnipeg, Canada.

Kindly advise us who manufactures gas warm air furnaces.

Ans.—Wise Furnace Company, Akron, Ohio; A. H. Robinson Company, 5105 Detroit avenue, Cleveland, Ohio, and Heating Systems and Supply Company, 107 West Van Buren Street, Chicago, Illinois.

Rain Water Filter.

From Charles F. Hauck and Company, 59 West Main street, Springfield, Ohio.

Who makes a rain water filter to attach on building to conductor?

Ans.—U. S. Cistern Filter Company, Bloomington, Illinois.

Thermometer to Register Humidity. From Parr Heating & Ventilating Company, Oshkosh, Wis.

Who makes a thermometer that will register humidity for home use?

Ans.—E. Vernon Hill Company, 64 West Randolph street, Chicago, Illinois.

"O. K." Ventilators.

From Republic Metalware Company, 1500 South Western avenue, Chicago, Illinois.

Who makes "O. K." ventilators?

Ans.—Canton Art Metal Company, Canton, Ohio.

4-Inch Copper Screw Tops

From Julius Hauser and Son, 1215 Fulton Avenue, Evansville, Indiana.

Please advise me where I can purchase 4-inch all copper screw tops.

Ans.—Berger Brothers Company, 229 Arch Street, Philadelphia, Pennsylvania, also Merchant and Evans, 347 North Sheldon, Chicago, Illinois.

300 Pound Capacity Lard Tanks

From The Amana Society Tin Shop, Homestead, Iowa.

Where can we buy lard tanks that hold about 300 pounds?

Ans.—Ajax Tank and Tower Company, 1456 West 38th Street, Chicago, Illinois, and Chicago Steel Tank Company, 1301 South 55th Street, Chicago, Illinois.

Address of Sievert Oil Burner Company

From W. J. McPherson, Livermore Sheet Metal Works, Livermore, California.

Please let me know the address of the "Sievert" Oil Burner makers.

Ans.—Sievert Oil Burner Company, 710 North Main Street, Los Angeles, California.

5-Inch Copper Can Covers.

From R. G. Suettinger, Two Rivers, Wisconsin.

Kindly inform me where I can purchase 5-inch copper can covers.

Ans.—Berger Brothers Company, 229 Arch Street, Philadelphia, Pennsylvania, also Merchant and Evans, 347 North Sheldon, Chicago, Illinois.

50 to 100 Gallon Milk Tanks

From The Amana Society Tin Shop, Homestead, Iowa.

Where can we buy milk tanks that hold from 50 to 100 gallons?

Ans.—Barber-Goodhue Company, 306 West Austin Avenue, Chicago, Illinois, and Mojonier Brothers Company, 4601 West Ohio Street, Chicago, Illinois.

The Editor's Page

"Mr. Jenkins" Selling Fake Pattern Drafting Outfits

MMR. ADOLPH KEELER, sheet metal and pattern drafting instructor of the Washburn Trade and Lane Technical Schools, Chicago, gave us information concerning the activities of a certain "Mr. Jenkins." It seems, from what Mr. Keeler said, that this "Mr. Jenkins" approached Mr. Keeler and the superintendent at the Washburn School in an attempt to have them use a certain set of patterns in their work of instruction.

These patterns are out and out fakes, according to Mr. Keeler, and should any sheet metal contractor be approached by this "Mr. Jenkins" with the object in view to selling them sets of these patterns it will be well for that sheet metal contractor to examine the patterns thoroughly before buying them and then decide not to buy them.

It is "Mr. Jenkins'" policy to approach a contractor employing a considerable number of men, present him the proposition and get him to buy a number of sets of the patterns at a greatly reduced price, the idea being to give each employe a set of the patterns upon which to practice. In this way he makes considerable of a haul from each.

Beware of the traveling delegate with sets of patterns to sell. All recognized sets of patterns or pattern drafting outfits are sold by the book department of AMERICAN ARTISAN and the prices charged for them by us are as low as is commensurate with efficient handling. At least get our opinion before you buy any sets of patterns from "Mr. Jenkins."

Cost Accounting That Helps You Make Money

HOW is your set working? Not your radio set, but your set of books. Is it so tuned that it will tell you your overhead cost at any time? Is it so arranged and planned that it will give you the history of the progress of every job that is going through your shop at any time?

Do your records give you the information you need to know about the costs of every job in time to give you a chance to plug the leaks before it is too late? Or do you still have to wait until the end of the year before you know whether you have come out of the small or large end of the horn?

There is no necessity for a sheet metal contractor or warm air furnace installer not knowing what his costs on each and every job are as that job goes through his shop. A set of records which does not give him that information at any time he desires to know it is worse

than useless, because it is taking up valuable time without producing the desired results.

How can a sheet metal contractor or warm air furnace installer hope to make money if he does not see to it that he has installed in his office account-keeping methods that give him information which he needs, not at the end of the year, but while the job is going through his shop? Records, if of any value at all, must show the proprietor of a business where the leaks are, as well as to tell him how much any given customer owes him.

The statistical value of well kept records is inestimable. A complete history of every job taken through the shop, when properly recorded, labeled and filed away, forms a guide for future business that cannot be duplicated. Think of the value to you as a business man of a chance to check over at your leisure the facts about any given job, sifting out the mistakes and excessive charges that may have been made on this job.

The beginning of a new year is an excellent time to install an adequate record-keeping set.

Therein lies the secret of success of every business.

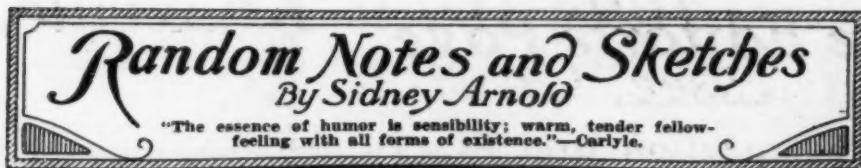
Advantages in Hand-to-Mouth Buying

HAND-TO-MOUTH buying is transferring to a greater degree, the risks of manufacturing and merchandising to the shoulders of those best able to carry them. It is relieving the retailer of a part of the business risk which he has formerly borne and putting it back on the wholesaler and manufacturer, who are more intelligent, better informed, and, therefore, better able to carry the risk . . . at less cost than the retailer has done.

In the second place, small-order buying has enormously reduced the volume of shelf-worn and out-of-date merchandise which, under the older system, sooner or later had to be sold at a sacrifice.

In the third place, this more rapid turnover of goods, for reasons already suggested, means a more effective use of capital in business and hence an economic advantage which ultimately is shared by the public, including not only the consumer but also the producer and distributor.

In the fourth place, the larger economic gains of having raw products turned into finished goods and into the hands of consumers as quickly as possible mean enormous economic and social gains. It reduces the stocks of distress and second-hand merchandise. By keeping inventories of manufacturers, wholesalers and retailers small, an enormous sum of capital is released for other industrial uses and the whole system of production and distribution is keyed up to a higher pitch of efficiency.—Dr. W. F. Gephart, vice president, First National Bank, St. Louis, in *Printer's Ink*.



Attacking the Etiology

"You'll have to take less strenuous exercises and get more sleep," said the doctor to the dejected man before him.

"That's my idea, exactly," said the other. "Would you mind coming up to the house and telling that to the baby?"

* * *

Heads or Tails

At a golf club one Sunday morning a member turned up late. Asked why, he said it was really a toss-up whether he should come there that morning or go to church.

"And I had to toss up fifteen times," he added.

* * *

I had the pleasure of a visit from Mr. Glenn L. Holford, Manager Atlanta Weir Furnace Company, Atlanta, Georgia, on Wednesday of this week. Mr. Holford had been in Chicago and Peoria on business and dropped in to say hello. He was on his way back to Atlanta when he came in, and I certainly appreciate his visit.

* * *

Wanted a Plenty

Ed Stahl, of the G. & S. Stove and Furnace Company, Chicago, had been looking over the Christmas cards on the counter for some time, when a saleswoman suggested: "Here's a lovely sentiment, 'To the only girl I ever loved.'"

"That's fine," he said, brightening, "I'll take five—no, six of those, please."

* * *

The delicate question of whether "to lend or not to lend" was ably solved by Tony, an Italian hot dog vender, in the following manner:

Tony rented a hot dog stand next to the bank. One day Tony's best regular customer asked Tony for the loan of five dollars until the following Saturday. The situation was critical with Tony. He was afraid of losing the five and he was

also afraid of losing the customer. If he lost the five he would also lose the customer; so he finally concluded it was best to refuse the customer thusly:

"Tony can no maka da loan. You se ats disaway. When Tony bought stand, Tony maka agreements widda da bank—bank sella no de hot dog and Tony no lenda da mon."

* * *

One Word Enough

The young woman carefully wrote out her telegram and handed it across the counter.

"Seventy-five cents," said the clerk, giving the yellow slip a professional glance.

"Gracious!" the girl exclaimed. "Isn't that rather expensive?"

"Regular rate, Miss," the clerk informed her.

"Seventy-five cents for only one word?" asked the girl.

"Yes, ma'am. But, of course, you can send nine more words without it costing you any more," he pointed out.

She thought over this for a moment.

"No," she finally decided. "I've said 'Yes' once. Ten of them would look like I was too anxious."

* * *

Here's a little skit that appeared in a recent number of Hauck's Messenger, a little house organ of Charles F. Hauck & Company, 59 West Main street, Springfield, Ohio, which I think deserves the honor of being passed on.

"Papa was about to apply the strap. 'Father,' said Willie, gently, but firmly, 'unless that instrument of chastisement has been properly sterilized, I must protest.'

"The old man gasped.

"'Moreover,' continued Willie, 'the germs that might be released by the violent impact of leather upon a porous textile fabric, but lately exposed to the dust of the streets,

would be likely to affect you deleteriously.'

"The strap hung limp in the nerveless hand and Willie beat it.

"Flowery language is used by many salesmen in making a sale, but you'll not run up against it when you come to this store for stoves or housewares. We do not endeavor to talk customers into buying something they do not want or need—we sell stoves and housewares on their merits, which insures a satisfied customer and one who will come again and again. Give us an opportunity to serve you."

* * *

The Texas Sheet Metal Contractors' Association Bulletin is responsible for this one.

Try This One

Judge: "I can't understand a big husky man like you beating a poor frail little woman like your wife!"

"But she keeps urging and taunting me until I lose my temper!"

"What does she say?"

"She yells, HIT ME! I dare you! Go ahead! Just hit me once and I'll have you dragged up before that bald headed old fossil of a judge!"

"Case dismissed!"

* * *

Would You Employ Yourself?

Honest, now—

Would you?

Would you employ yourself?

Just imagine yourself the "boss" for a minute—

Then check up your record for the past week, as an employe—

Remember it's your own money that will pay your salary—

If you applied for a job, would you get it?

Has your work for a week made a profitable investment for the store?

Have you analyzed what you are doing and why?

Have you been heart and soul "on the job?"

And in your job?

What does this inventory show?

You're "the boss," now, you know!

Would you employ yourself?

Warm Air Successfully Heats Knoxville, Tennessee, Church

Battery Connection and Forced Air Make Performance Beyond Expectations

THE accompanying illustration shows one definite reason why the warm air heating industry should not limit itself to residence work.

The job shows what Haynes Brothers of Knoxville, Tennessee, were able to do in the way of a forced installation for the Gillespie Avenue Baptist Church in that city. Here's what Haynes Brothers say in describing the job:

"This job was put in at the Gillespie Avenue Baptist Church of this city. The heating unit was a battery of Wise No. 148's, as you can see.

"The air was circulated by means of two Miles warm air furnace

fans, No. 1000's. These were located and connected as shown in the picture.

"We have only one picture showing duct work, but they had four main ducts. This job has been in use for several days and has been tested in as cold a weather as we have had. The performance of this job is far beyond our expectations."

The heating unit consists of two No. 148 Wise furnaces, with two No. 1000 Miles fans, used to propel the air. The plans were drafted in our shop.

The job has been installed and in operation for about sixty days now and has proven more than satisfac-

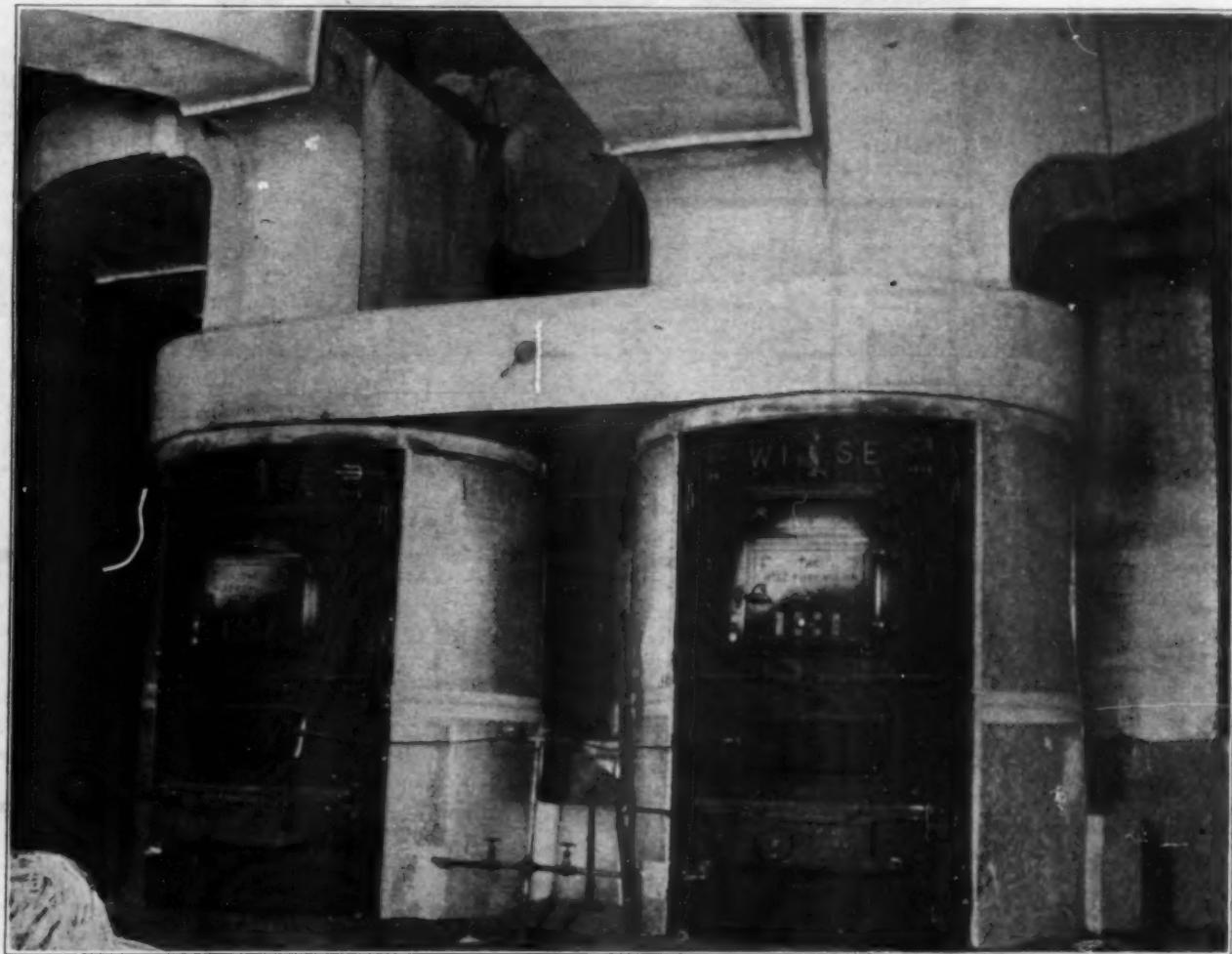
tory.

While we have not had extremely cold weather, the temperature has been down as low as about 25 degrees and the building was heated quickly at this temperature.

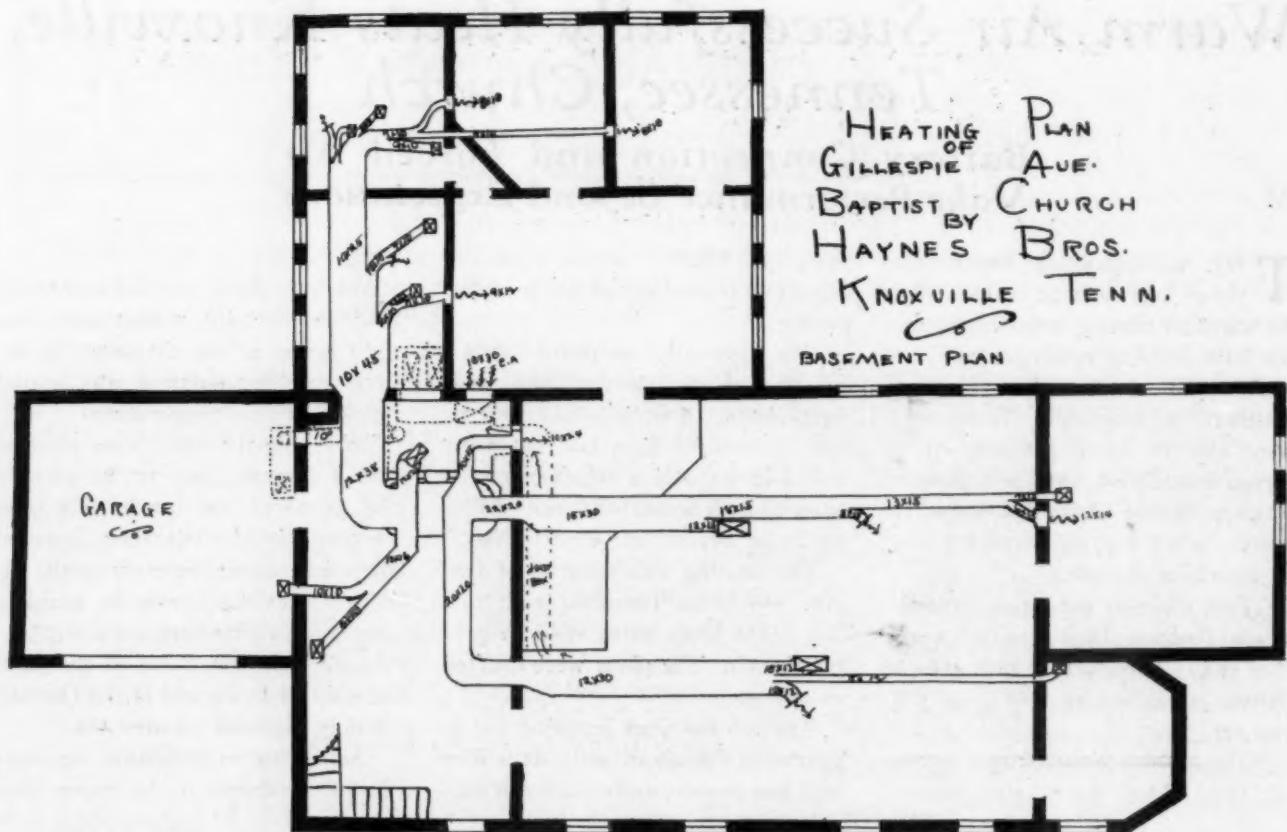
In setting the Miles fans we first laid a concrete base in the rear of the furnaces and made this base perfectly level. We then fastened the fans down securely with lag bolts. They can hardly be heard in the main auditorium.

Our firm, consisting of the partnership of L. E. and H. L. Haynes, is only eighteen months old.

Since our organization we have found business to be more than



Double Battery Warm Air Heating System Installed in the Gillespie Avenue Baptist Church, Knoxville, Tennessee

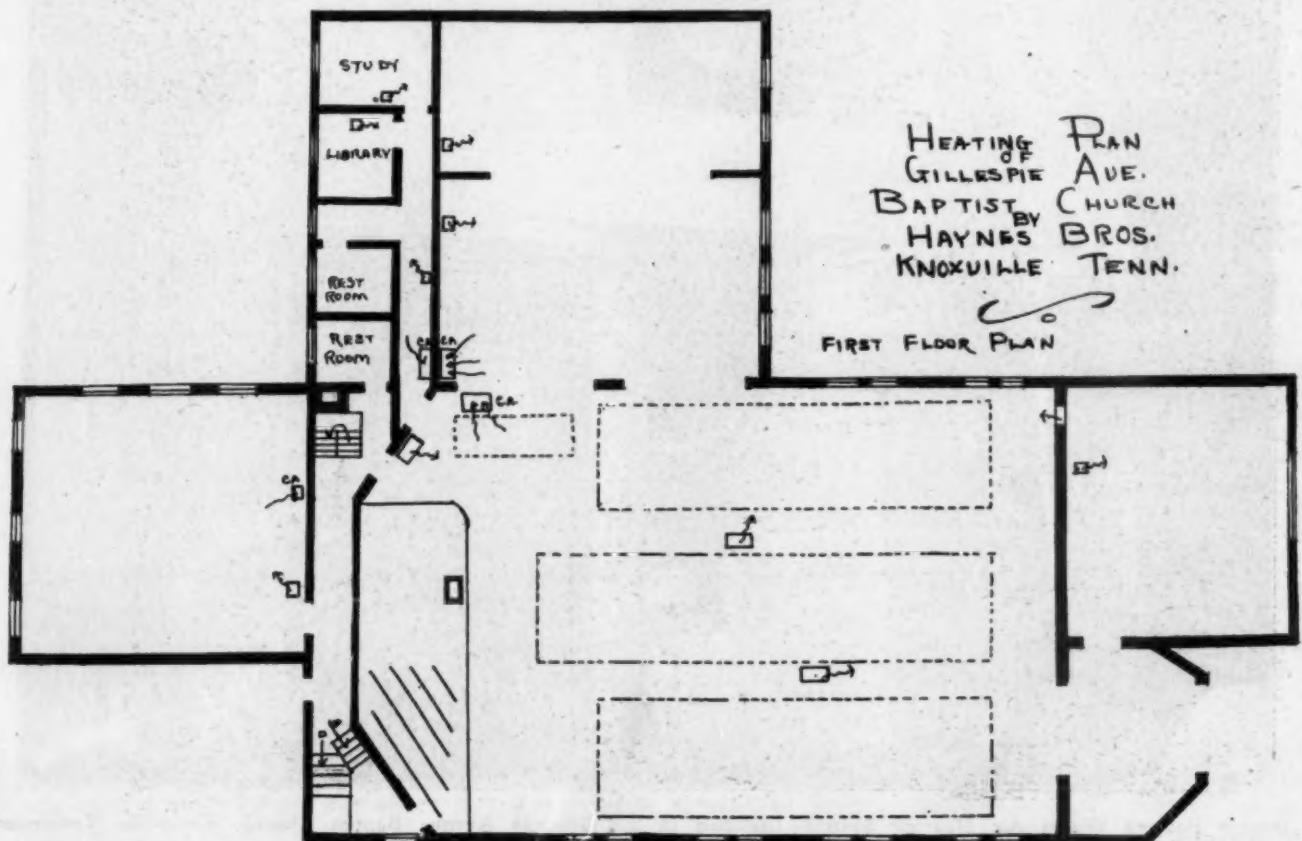


good.

We have endeavored to make all our jobs as good as possible. In doing this we have tried to keep our

installations in accordance with the Standard Code and have adopted all changes in installation recommended by the University of Illinois.

At the present we are working on a forced air job being installed for the Oakwood M. E. Church. This installation is using as a heat-





Exterior view of the Gillespie Avenue Baptist Church, Knoxville, Tennessee

ing unit two No. 233 Wise furnaces set in brick. We are using a 48-inch, 7,500 revolution per minute, one-inch static pressure fan to move the air.

We have also just completed a forced air job for the Vestal M. E. Church that required two No. 230 Wise furnaces, brick set, and a 48-inch fan.

How to Overcome Poor Draft Conditions Caused by Higher Surrounding Buildings

Short Transition Cap With Slip Fit Collar for Ventilator Is Recommended

By P. A. SCHMALZ, Harbor Beach, Michigan

REPLYING to the inquiry of Julius Hauser & Son in your issue of November 27th regarding poor chimney draft, would say that all who have had troubles of this kind to contend with are usually slow to give advice for the reason that there seems to be no positive cure.

I have experimented over a period of twenty-four years with these problems and while I usually manage today to overcome most of them with methods well known to most of us, yet the extra stubborn one comes up occasionally that keeps us

all guessing. For this reason I am willing to offer my advice to J. H. & S. in the hope that I may be benefited someday myself.

If the higher buildings mentioned are only on two sides, which would allow a good current to travel through between them, then the best top to put on is the arch or tee; the arch can be made of metal, making a half circle over the outside dimensions of the chimney and about four inches longer than the width of chimney the open end way.

If tee pipe is used, be sure that the stack and tee pipe are at least

one-third larger than the flue capacity and make the horizontal pipe only four or five inches longer than the diameter of the stack.

The closed sides are placed towards the higher buildings, the open ends toward the currents of wind. If high buildings are on all sides the best top to use is a good stationary ventilator, any make that will not back draft. But select a ventilator of at least twice the flue capacity to allow for soot accumulation.

A short transition cap with slip fit collar for ventilator is recommended, as the vent may need cleaning out sometimes. If these gravity schemes do not work, the only remedy I could suggest is forced draft, of which type there are many and varied ways that are good.

F. S. Walters Offers Solutions to M. S. McNeese's Problems

F. S. Walters, 147 West Fountain Street, Battle Creek, Michigan, offers a solution to the problems of M. S. McNeese, which appeared in our issue of December 11. The first problem is troublesome moisture on the windows. The second is that one of the rooms fails to heat.

"In the first case," Mr. Walters says, "there is possibly very wet ground where the furnace is placed. The furnace should have been set on a cement foundation. If there is a pit, that should have been cemented in, also the duct leading to the furnace.

"In the second case, the furnace should have been lowered. The warm air ducts need more elevation. Just a few days ago we ran into a return air pipe, in this case a 10-inch pipe, from a sun parlor that has a 10-inch warm air pipe leading to it. This latter pipe was 25 feet long and did the work all right, making a circulation of air from the sun parlor to the furnace."

Are you having trouble with any particular heating job? Perhaps some minor oversight on your part has caused a system to give trouble. If so, let us help you solve the problem.

L. J. Mueller Furnace Co. Holds Annual Sales Conference

J. C. Miles Spoke on the Development of Forced Air Heating

THE twenty-fifth annual sales conference of the L. J. Mueller Furnace Company, Milwaukee, Wisconsin, found 72 men assembled at the opening session Monday, December 13th.

Sessions were held at the Hotel Astor in the Venetian Ball Room, on the floor of which had been set up samples of the complete line of warm air furnaces, steam and hot water boilers, garbage burners and tank heaters, cabinet heaters and the recently introduced gas-fired steam and hot water boilers.

A new model warm air furnace was introduced for the first time which will be offered to the trade commencing January 1, 1927.

Prominent among the speakers were J. H. Puelicher, past president of the American Bankers' Association and president of the Marshall & Illsley Bank, Milwaukee, who discussed "Financing a Business" with special stress on the problems of the retailer.

J. C. Miles, vice president of the Warm Air Furnace Fan Company, talked on "The Development of Forced Air Heating."

"The Gas Equipment Market"

covered by W. V. Turner of "Gas Age-Record," and "The Public Utility Viewpoint" discussed by W. R. Lacey, commercial manager of the Milwaukee Gas Light Company, were given the closest attention.

One full day was spent by the men at the Mueller factory, watching tests and experiments conducted

by the company's heating and ventilating engineers. This was followed by the annual banquet at the Hotel Astor, for which the Venetian Ball Room had been decorated in the Christmas motif.

Those attending the conference included a group of 14 new salesmen whom the company have added to their force to cover additional territories and to serve the trade closely. January 1st these men will start on their territories for new business, armed with new prices and new merchandising ideas that will be of benefit.

Recommending Disuse of Humidifiers in McNeese Case

Showing Layout Recommendations for a Cold Air Auxiliary

By J. D. GRACE

REGARDING the question of M. S. McNeese and the furnaces which are giving him trouble, I should like to say that on the furnace which is giving the excessive humidity I should discontinue the use of the humidifier while the trouble prevails.

I have observed many cases of this kind, usually finding that the trouble was not in the heating plant at all, but rather caused by too much vapor from cooking, washing and

numerous other external sources. At any rate discontinuing the humidifier will prove to the furnace installer whether the trouble lies in the heating plant or not.

In new buildings plaster and other similar materials used in the construction of them contain large quantities of moisture, which should be disposed of as quickly as possible by slow firing and disuse of the humidifier for a while.

The other plant, I believe, is air



L. J. Mueller Furnace Company Group at Sales Conference of that Company Held Recently in Milwaukee

bound, which answers the question as to why the furnace and basement heats and the house does not, there being no circulation. Of course the manner in which the building is laid out often alters the location of the cold air return.

I usually find it good policy to locate the cold airs in the living room and dining room, and if there is a central hall connecting bed rooms and bath room, it is well to place one cold air return in this hall to take care of the return air from these rooms. The doors of these rooms should not be fitted too closely at the bottom, in order to provide assurance that the return air can reach this hall in sufficient quantity to relieve the pressure. This return air is figured as an auxiliary only, the full return being taken from those rooms which are constantly in use when firing the heating plant.

A drawing with detailed information will, no doubt, reveal the trouble and will bring proper solution from many subscribers to AMERICAN ARTISAN.

W. S. Grove Gives Method of Finding Angle of Elevation of Flue

In a recent issue of AMERICAN ARTISAN, George Streibe, 46 Ashford avenue, West View, Pittsburgh, wanted to know how to determine the angle of elevation of a flue connection.

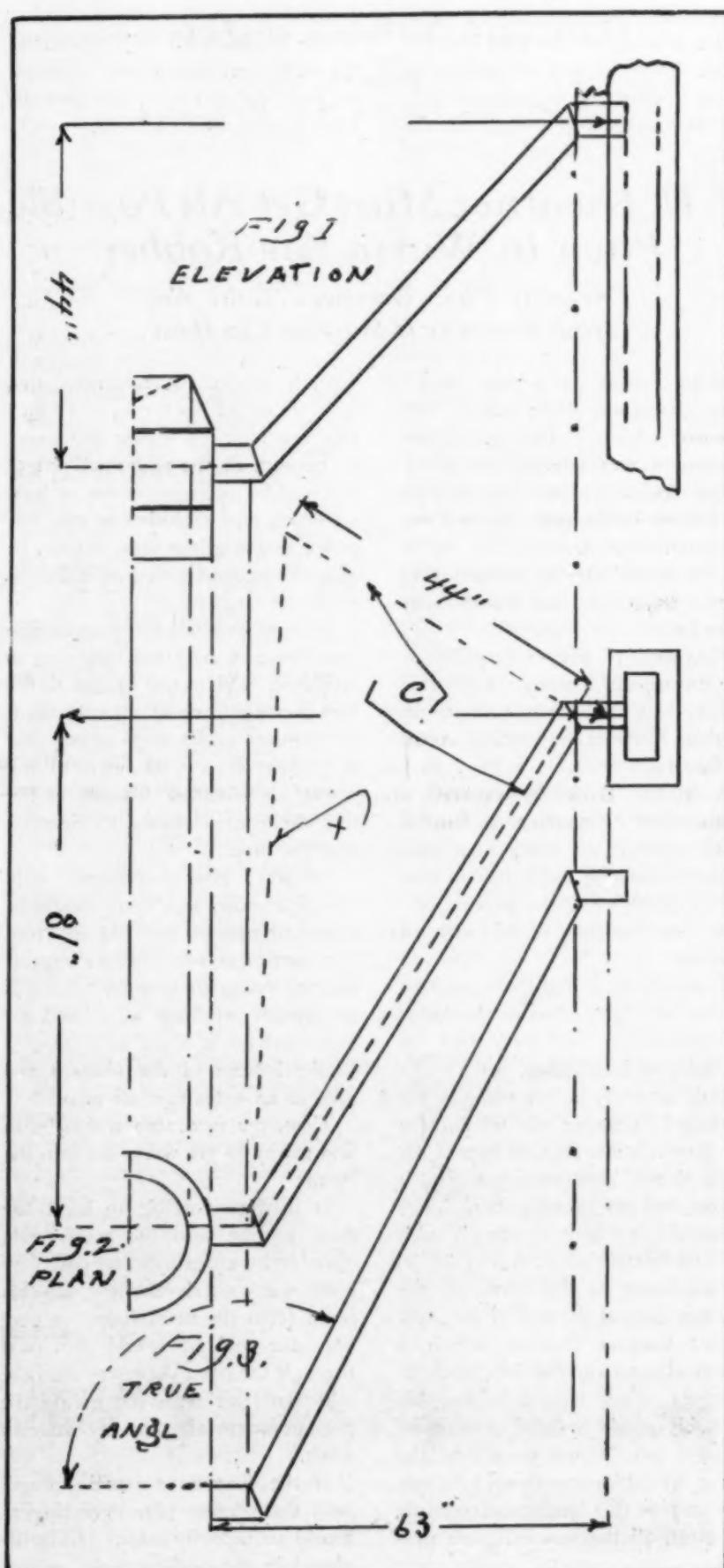
Mr. W. S. Grove, 26 South 28th Street, Penbrook, Pennsylvania, gives a formula and sketch for working this problem out.

To AMERICAN ARTISAN:

Some time ago I noticed a request for a rule for finding the true angle of an oblique pipe. The rule I have illustrated will apply to the problem.

By referring to the sketch, figure 1, you will see that this figure represents the elevation of the pipe, and rises 44 inches from the center of the furnace pipe collar to the center of the chimney flue.

Figure 2 shows the plan of pipe and furnace. In the plan the pipe makes a run of 81 inches and breaks



W. S. Grove's Plan of Finding the Angle of Elevation of Smoke Flue Connection

over 63 inches, as I have indicated.

To obtain the angle, draw a right-angled triangle on the plan line "c" whose height equals 44 inches, as shown. Then the hypotenuse "x" will be the correct length of the

oblique pipe on centers, as shown in the plan and elevation.

The hypotenuse "x", placed on the same intersecting lines touching the plan and elevation, will give the angle sought, as in figure 3.

H. H. Kwatnez Must Get All Possible Pitch in Warm Air Robber

Present Pipe Removes Cold Air from Room It Is Supposed to Heat

I HAVE read the inquiry of H. H. Kwatnez, 5630 Lake Park Avenue, Chicago, Illinois, in the AMERICAN ARTISAN with reference to the experience he is having with the heating of the room in question. It is, of course, hard for one not on the job or an "expert" in heating to offer a suggestion that would guarantee heat.

However, if any explanation or suggestion of mine at any time would help a furnace man in trouble, I would feel rather proud of that fact.

Now, Mr. Kwatnez, you have a pipe 30 feet long, which you and I must agree is an extra long one, probably too long for it ever to give full capacity, using the gravity system. It might work with a "booster."

I am not sure that the manufacturers of "pipeless furnaces" recommend the so-called thief or robber pipe installation.

But, anyway, in referring to the Standard Furnace Code, we find the recommendation that all warm air pipes should have an upward pitch of one inch per running foot. Thus a pipe 30 feet long, to comply with this recommendation, would be 30 inches lower at the start off the furnace than at the end of the pipe.

For various reasons, which a practical man on the job, such as yourself, would be able to see, this probably would be hard or impossible to do. "Head room" in the cellar would be one thing. At any rate, a pipe this long must certainly be given all the upward pitch possible.

With reference to the size of the

pipe, if, under circumstances, that is a 10 or 12 foot run, a 12-inch pipe was required to heat this room, on account of the additional length it would be advisable to use at least a 14-inch pipe; in other words, due to the length of the pipe, it must be of greater capacity than would ordinarily be required.

As now installed, the present pipe removes cold air from the room in question. This could be due to the fact that the force of the cold air at the register outlet is so strong that it pushes its way through to the warm air chamber without giving the warm air a chance to circulate into the pipe.

Anyway, your experience with this pipe shows that there should be a way to remove the cold air from this particular room before expecting any warm air to enter. As it is at present working as a cold air pipe, perhaps it could be connected to the bottom of the furnace and used as an extra cold air pipe.

Then, the next step would be to find a way to get warm air into the room.

If it were possible to leave the door leading into the room wide open, or by experimenting part way open, warm air should flow into this room from the main room, or perhaps the cold air would then pass through the open door-way into the other cold air registers, giving the present warm air pipe a chance to work.

If the door must remain closed, with the present pipe operating as a cold air pipe, by means of a grille placed in the wall near the ceiling, or above the door, warm air from

the main room may circulate into the smaller room.

We are all undergoing a period of education, during which time, as installers, we must do our part to advance warm air heating, and so you are wise in asking for help. Then do a little experimenting on this particular job, without regard to cost, for this is an item which must be provided for in the overhead expense of the furnace installer, something that in the past some have not rightly considered.

If you finally get the room heated, you will be well paid for your time in the satisfaction you will feel in having accomplished a difficult heating problem and turning your customer into a booster.

When a customer, for whom you have installed a furnace, sees that you are doing your very best to satisfy him, as a rule you will find him willing to do his part also and exercise the proper patience.

Anyway, I certainly hope you are able to find a way to heat that room.

A FURNACE SALESMAN.
Youngstown, Ohio.

John G. Knodle Recommends Cutting a Hole in Floor in Kwatnez Problem

John G. Knodle, 1816 North Church Street, Rockford, Illinois, gives a solution to the H. H. Kwatnez problem.

To AMERICAN ARTISAN:

In answer to Mr. H. H. Kwatnez, of the Acme Metal Service Company, 5630 Lake Park Avenue, Chicago, I want to submit the following solution to the problem: I suggest that he cut a register in the floor of the room in question and letting the cold air out of the room to the basement under this room, otherwise take a cold air return pipe back to the furnace.

I have used the first plan with good success in a number of cases under similar conditions.

M. T. Cornwell Lauds Mr. Crawford's Article in Our November 27th Issue

Mr. M. T. Cornwell of Tuttle & Bailey Manufacturing Company,

Kansas City branch, has something to say about the article by C. M. Crawford.

To AMERICAN ARTISAN:

In your issue of November 27, 1926, on pages 183 and 184, you published an article by C. M. Crawford, president, Tayco Register Shield Company, in which he says in part:

"The water pan in the average furnace is not adequate to properly humidify the air, and there is no provision made at all with hot water and steam heating."

I believe the average reader would take this to mean that in any building in which there was steam or hot water heat there could be little hope of obtaining the proper amount of

humidity.

Fortunately, however, there are concerns which manufacture radiator cabinets or covers which are equipped with humidifying pans running the length of the radiator just under the top of the enclosure on the furnace.

Radiator cabinets are fast becoming not only an artistic addition to the home, covering up unsightly radiators, but are an economic necessity in that they protect health by supplying the proper amount of moisture in the air.

Mr. Crawford's article is very interesting and home owners' should take heed of its valuable information and protect themselves accordingly.

Deflector at End of "Tap Pipe," in Kwatnez Problem, Will Do Little Good

Damper Can Be Inserted in Main Warm Air Duct to Create Circulation in Robber

By L. W. MILLIS, Security Stove & Manufacturing Co.

IN this problem of the robber pipe failing to work, presented by Mr. H. H. Kwatnez, I take it that the system giving the trouble is a 3-way pipeless, with a "tap" pipe 12 inches in diameter and 30 inches long.

There is nothing in the inquiry to show how deep the basement is, nor that the area (113 inches) of the "tap" pipe is included in the warm air duct, which has supply ducts 10 per cent larger than the warm air duct.

In either event the "tap" pipe will bring cold air back to the casing. A deflector at the end of the "tap" pipe in the casing will do very little good (and may cause damage to the top of the furnace castings).

I assume that there is a neck, perhaps 26 inches in diameter, at the top of the furnace. If this can pass enough air to carry the heat capacity of the furnace, it should be dampered so that a certain amount of air must go through the "tap" pipe.

The temperature of the air de-

livered at the register connected to the "tap" pipe will probably be 50 degrees less than the one over the furnace. Your friend, Mr. Kwatnez, can determine the size of the warm air damper by covering the big warm air register enough to force warm air through the 12-inch pipe. Then calculate the proportion of the warm air duct that must be stopped.

Under no circumstances should the main warm air duct be entirely stopped. If both of the return ducts are not flowing well, put a partition in the casing between the shoes.

McEwen Furnace Company, Kansas City, to Occupy New Factory

Electrically operated machinery will be a feature of the new factory of the McEwen Furnace Company, Kansas City, Missouri, which that company is expected to occupy shortly after the first of the new year. The factory is located at

5204 East 15th Street, where the company will shortly be turning out furnace pipe, elbows, fittings and welded boiler plate steel furnaces.

The company has been at its present location at 15th and Brooklyn Streets for the past five years, but a constantly growing business has made it necessary to build the new plant.

The officers of the company are: President and treasurer, W. L. McEwen; vice-president and secretary, P. A. McEwen.

Installers Have Not Yet Discovered Value of Follow-Up Work

Warm air furnace installers as a whole have not yet reached the point where they appreciate to the fullest extent the value of following up their furnace installations for cleaning and repairing work. The majority still cling to the old idea that a furnace sold is a furnace which cannot net them any further business until it is worn out.

In answer to AMERICAN ARTISAN questionnaire which asked, "Do you maintain a card index of all home owners and those you sell for follow-up work?" and "Do you follow up these installations regularly and see that the furnaces are kept in good condition and regularly cleaned?" there were 61.54 per cent who said they did not keep indexes for follow-up work. The remaining 38.46 per cent do keep such an index.

It is significant to note here that those furnace installers who are included in the 38.46; that is, those who do keep an index, are in the class "A" installer group—they are all considered good credit risks and, generally speaking, use good business methods.

Furnace Manufacturers Had Better Look Into This ! !

Here's a chance for the furnace manufacturers to get the low down on their salesmen. AMERICAN ARTISAN furnace annual questionnaire asked, "Do you find furnace manufacturers' salesmen willing

and able to help you?" The answers were equally divided, 50 per cent yeas and 50 per cent nays.

How come?

Here are some of the characteristic replies: "Only a few of them capable of giving much assistance. Most of them could not install a job properly themselves."

"We consider it poor policy to let the salesmen meddle. Most of them don't know their business."

On the other hand, those who said the salesmen are willing and able to help had no remarks to make, leaving the question answered with a plain "Yes."

So the situation stands.

Death Takes Charles H. Manny, Father of Harvey, at Age 66

*Was for Many Years Chicago Branch
Manager of Boynton Furnace Co.*

DEATH has once again entered the ranks of the warm air heating industry and has taken away another of the old-timers in the game. Mr. Charles H. Manny, father of Harvey Manny, president of the Western Warm Air Furnace & Supply Association, and connected with the Robinson Furnace Company, 205 West Lake street, Chicago, died at the home of his daughter, Mrs. Grace M. Mott, Edison Park, Chicago, December 20, 1926.

As is the case in many other industries and the men connected with them, the warm air heating industry is born and bred into the bone and marrow of the Manny family. Three generations of Mannys have made it their life's work.

The elder Manny, Harvey's grandfather, entered the warm air heating industry as an apprentice to Mr. N. A. Boynton, founder of the old original Boynton Furnace Company in New York City, which was established in 1849, at the time of the California gold rush.

Charles H. Manny was born at Yonkers, New York, July 16, 1860, the year of the beginning of the Civil War. Between the ages of 6 and 7, Mr. Manny moved to the midwest with his father, who had been transferred to represent the Boynton Furnace Company in the midwestern territory. He received his primary education in the west and was graduated from college at Polo, Illinois, at the age of 20.

Immediately upon leaving college,

Mr. Manny entered the employ of the Boynton Furnace Company in their Chicago branch, at 147 Lake street, later becoming manager of the Chicago branch of the company. The position as manager of the Chicago branch of the Boynton Furnace Company Mr. Manny held throughout all the years of his active business life, during which time he made a host of friends and acquaintances both in and out of the warm air heating industry, as the floral tributes at his funeral attested.

About four years ago Mr. Manny's health began to fail and he retired from active business. He was confined to his bed for about a year prior to the time of his death.

In addition to his son, Harvey, and his daughter, Mrs. Grace M. Mott, Mr. Manny is survived by a son, Richard H. Manny, of Oak Park, Illinois.

Edwin Meredith Squier of New Jersey Zinc Company Dies

Edwin Meredith Squier, a director and a member of the executive committee of the New Jersey Zinc Company, died of pneumonia at his home at Rahway, New Jersey, after an illness of three days. He had been identified with the zinc industry for fifty-three years.

Mr. Squier was born in Rahway, New Jersey, April 8, 1852, and was a member of a Revolutionary family. He first became associated with the firm of Manning & Squier, of which his father, the late William

C. Squier, was the founder. Later he was with the Passaic Zinc Company, and on its formation became interested in the New Jersey Zinc Company. He was also a member of the American Zinc Institute; director of the Rahway Saving Institution, of Rahway; the Smith Valley Realty Company and of various companies allied with the New Jersey Zinc Company and an active member of the American Zinc Institute.

Since the death of his father, in 1906, Mr. Squier had lived in the family homestead, which has been in the possession of the family since 1779.

Mr. Squier had contributed to numerous charities and other enterprises. He was a member of the Lawyers' and Bankers' Clubs of New York, and the Colonial Country Club and the Ildoran Outing Club of Rahway. A brother, Frederick C. Squier of Rahway, survives. His eldest brother, Stuart C. Squier, died just a few days previous.

Burial was in the family plot at Rahway.

Cannot Include All Expenses in Income Tax

The Board of Tax Appeals, Washington, District of Columbia, recently rendered a decision refusing to allow a traveling man to deduct \$190 for tips, \$45 for telephone and telegraph, \$45 for bus and taxis, \$400 for model hire, \$365 for entertaining customers, \$378 for sample carriers, \$73 for laundry and \$26 for valet.

Hotel bills, meals, railroad fare and baggage charges were held to constitute permissible deductions. In other words, traveling salesmen must use discretion in deducting on their income tax returns what they spend while on the road.

A New Jobbing House to Start in Grand Rapids

The first of January will see a new jobbing house in Grand Rapids. This concern will be known as Beh-

ler & Young Company, largely controlled by Wayne Young, formerly with the United States Register Company, and John Behler, who has been representing W. C. Hopson Company in Western Michigan, according to the *Michigan Standard Bulletin*.

We all remember these men as genuine Michigan Standard boosters. A franchise has been granted

them by the Association to sell Michigan Standard Products, so apparently they still wish to boost this worthy product.

This will provide Grand Rapids with two Michigan Standard jobbers as the connection with W. C. Hopson Company remains as it has been for the past few years.

Best wishes, John and Brig, we hope that you do well.

Testimonial Dinner Given to R. J. Schwab to Commemorate 50th Anniversary of His Company

Sons and Employes Pay Tribute to Founder Who Rose from Humble Beginning

By J. F. JOHNSON

ON Wednesday evening, December 29th, the executive and office staff and all employes who have been with R. J. Schwab and Sons Company for ten years or more gathered in the first floor room of their new building to pay honor to R. J. Schwab, the founder of their company.

In spite of the fact that Mr. Schwab, by reason of his genial nature, has counted each day of his seventy-nine years a happy one, this day surely was his happiest.

On his right at the dinner

table sat Henry E. Schwab, his eldest son; on his left, Charles E. Schwab, both active directors of the organization, and about him employes of long standing.

Henry E. Schwab was toastmaster, A. G. Pomrening song leader, and the Misses Metz and Eleanore Johnson, talent drawn from the organization, rendered string, piano and vocal musical selections.

Charles E. Schwab briefly reviewed the history of the company since its inception and introduced the "Old Timers" Club, consisting

of men who have been with the company 25 years or more.

Henry E. Schwab spoke of progress made and of plans for the future.

Mr. Leo Nohl, prominent attorney of Milwaukee, and President of the Milwaukee Optimist Club, gave a very interesting talk on optimism, enthusiasm, patriotism and the human touch in our daily life.

The human touch, enthusiasm and pride achievement was very evident in the Schwab organization, Mr.



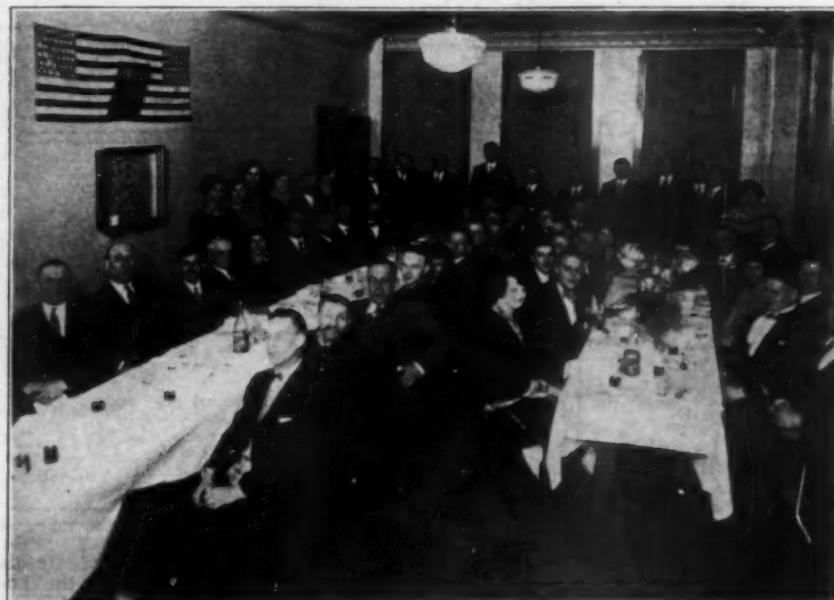
R. J. Schwab.

Nohl said, by reason of the large number of long time loyal employes.

Mr. Nohl, on behalf of the executives and employes made the presentation of the fiftieth anniversary token to Mr. Schwab. The token was in form of a gold medallion. One of these tokens was given to each employe. Mr. R. J. Schwab responded and as he spoke of the early days his face was wreathed in smiles. He chuckled frequently as he told about his apprenticeship in an iron foundry at the age of fourteen, his trip down the Mississippi as a cook fortified with his mother's cook book and his violin, and his marching in Abraham Lincoln's campaign parade.

He laid much stress on the importance of his apprenticeship as it was then he said that he learned all the details of the various branches of the foundry business.

Without the knowledge and ex-



R. J. Schwab Group at 50th Anniversary Celebration.

perience thus gained he said he would never have been able to make his humble beginning as he often found it necessary to do all the work, from firing the cupola to breaking the molds.

He early started in the manufacture of warm air furnaces and designed and added improvements on many since his first.

Mr. Schwab said he was mighty glad to come up from Florida for the occasion and as his part of the celebration he wanted to present the "old timers" (many of them mere boys when he hired them twenty-five to forty-six years ago) each with a check for fifty dollars on this fiftieth anniversary.

The following men compose the old timers' club: Henry Roelke, 46

years' service; William Busby, 41 years' service; Fred Grulke, 40 years' service; William Witkowki, 40 years' service; Henry Mayer, 32 years' service; Frank Kroening, 25 years' service.

Mr. Henry Roelke, acting as spokesman for the men, told about the experiences, trials and happy hours of the days when the company was being started. On behalf of his comrades and himself he presented to Mr. Schwab a silver Victory Shaft, a beautiful surprise gift, inscribed to Mr. Schwab as a lasting remembrance of this fiftieth anniversary.

In closing Mr. Schdab recited a little verse which expressed his fellowship toward those who had gathered to honor him.

may be trued up so as to be at right angles with the top and bottom.

The side edges of the boot should be left about $\frac{3}{4}$ inches long then bent out to conform to casing.

Locate the boot position at the furnace by placing it against the casing, making a line on the casing on each side of the boot inside. The cut line on each side should be in 1 inch from these lines. The top cut line should be 1 inch more than the height of the boot from the lower edge of the casing. The lower cut line should be $1\frac{1}{2}$ inches from the lower edge of the casing.

To cut the opening use a chisel to start the cut on each side; then use double cut snips for each side cut. For the top and bottom cuts use right and left hand straight snips. By so doing the workman does not change position from one side to the other and the metal cut out is in one piece. The $\frac{3}{4}$ -inch sides should be trimmed off at the top at 45 degree

Presenting a Good Method of Making Cold Air Boots

Author Will Feel Well Repaid for Time Spent in Description if Method Helps Installers

By R. C. BATES, Murphysboro, Illinois

THE best method, as I have found it, for making or installing a cold air boot is this: After the boot is assembled, or even in the flat, as the workman prefers, set the trammel points to a radius equal to that of the furnace casing. Slip the furnace end of the boot over a corner of the work bench and while it is being held, put one trammel point on the edge of the boot about $\frac{3}{4}$ -inch back from the end and describe an arc on the bench. Then repeat this operation from the opposite edge. Where these arcs intersect will be the center.

Then with one trammel point on this center, describe arcs across the boot, then reset trammels in $\frac{3}{4}$ -inch and describe again, this line being the cut line. Repeat the same operation on the opposite side.

After cutting, run the top and bottom through a flush roll crimper set $\frac{3}{4}$ inches, using 2 or 3 passes and crimping rather deep; then with a mallet over the square end of the mandrell, stake these crimped edges

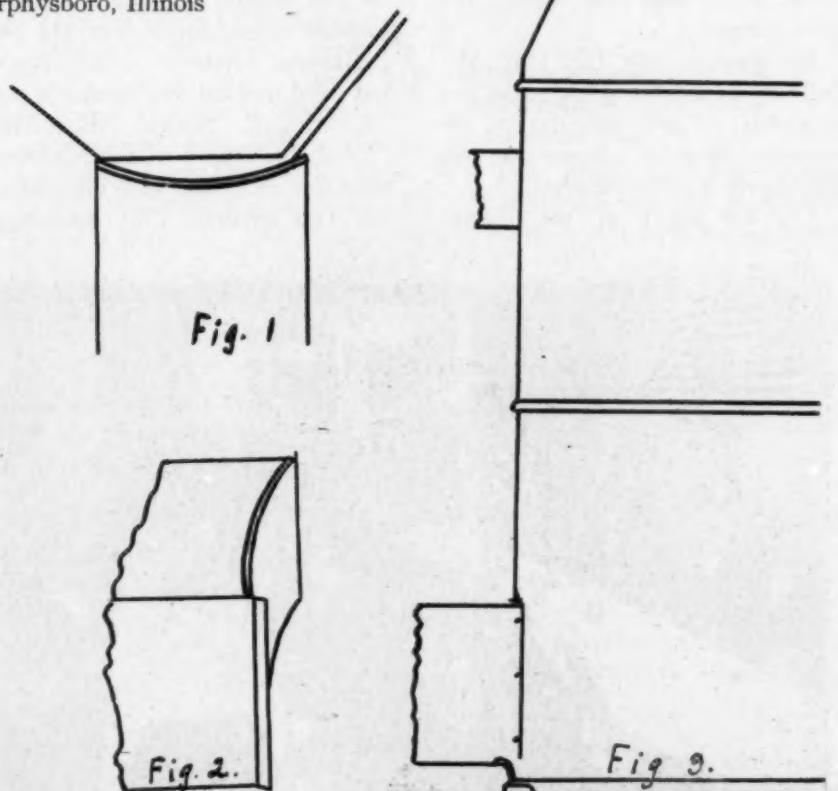


Figure 1 shows how to describe arcs for determining the center. It also shows the cut line on the boot. Figure 2 shows the furnace end of the boot ready to install. Figure 3 shows the boot as it looks attached to the furnace. Notice that the top of the boot is inside of the casing, while the bottom is outside against the lower ring.

then bent straight out.

Punch 3/16-inch holes close to the edge of the casing along the top of the boot opening about 4 or 5 inches apart. Then start one corner of the top flange of the boot up inside of the casing, working right across to the opposite corner. Then the boot should be in a position with the upper flange inside of the casing and lower flange outside. With a sharp scratchhawp punch holes through the boot flange at the holes in the casing and bolt up with 3/16 x 1/2 stove bolts, also put 2 or 3 bolts down each side of the boot.

If there is more than one cold air boot on the furnace, the piece cut from the casing should be bolted to the side of the boot nearest to the other boot and projecting almost to the furnace. This piece acts as a baffle to keep either cold air duct from working against the other.

The bottom edge of the casing which projects above the bottom of the boot should be pulled down over the boot and asbestos paper strips pasted clear around the connection inside. This style of insulation is the most rigid and is very neat too.

If you publish this article, and if any of your readers are benefited by it to the extent that they change over from the too common method of dovetailing the boot to casing or any other slipshod way, I'll feel that my time spent in writing this article will not have been in vain.



Mississippi Sheet Metal Contractors' Association convention, Meridian, Mississippi, January 18, 1927. Secretary, J. C. Thomas, Corinth, Mississippi.

West Virginia Hardware Association Convention and Exhibition, Parkersburg, January 18, 19, 20, 21, 1927. James B. Carson, secretary, 411 Mutual Home Bldg., Dayton, Ohio.

Mountain States Hardware and Implement Association Convention, Denver, January 18, 19, 20, 1927. W. O. McAllister, Secretary, P. O. Box 513, Boulder.

Texas Hardware & Implement Association Convention, Dallas, Texas, January 18 to 20, 1927. Dan Scoates, P. O. Box H, College Station, Texas, Secretary.

Missouri Retail Hardware Association Convention and Exhibition, headquarters,

Hotel Statler, St. Louis, January 24, 25, 26, 1927. F. X. Becherer, Secretary, 5106 North Broadway, St. Louis.

Indiana Retail Hardware Association Convention, Claypool Hotel, Indianapolis, Exhibition at Cadle Tabernacle, January 24, 25, 26, 27, 1927. G. F. Sheely, Secretary-Treasurer, 911-913 Meyer Kiser Bank Building, Indianapolis.

Oklahoma Hardware and Implement Association Convention, headquarters, Masonic Temple, Oklahoma City, January 25, 26, 27, 1927. Charles L. Unger, Secretary-Treasurer, 207-208 Bloomfield building, Oklahoma City.

American Society of Heating and Ventilating Engineers, 33rd annual meeting, Hotel Statler, St. Louis, Missouri, January 25 to 28, 1927. A. V. Hutchinson, 29 West Thirty-Ninth Street, New York City, secretary.

Kentucky Hardware and Implement Association convention and exhibition, Jefferson County Armory, Louisville, Kentucky, February 1 to 4, 1927. J. M. Stone, 200 Republic Building, Louisville, Kentucky, secretary and treasurer.

Wisconsin Retail Hardware Association Convention and Exhibition, headquarters, Auditorium, Milwaukee, February 1, 2, 3, 4, 1927. George W. Kornely, 1476 Green Bay Avenue, Milwaukee, Exhibit Manager. P. J. Jacobs, Secretary-Treasurer, Stevens Point.

Nebraska Retail Hardware Convention and Exposition, February 1, 2, 3, 4, 1927. Headquarters, Cornhusker Hotel, Lincoln. George H. Dietz, Secretary-Treasurer, 414-419 Little Building, Lincoln.

Iowa Retail Hardware Association Convention, headquarters, Hotel Savery, Des Moines. Exhibition at Des Moines Coliseum, February 8, 9, 10, 11, 1927. A. R. Sale, Secretary, Mason City.

Michigan Retail Hardware Convention and Exhibition, Grand Rapids, Michigan, February 8, 9, 10, 11, 1927. Arthur J. Scott, Secretary, Marine City, Michigan. K. S. Judson, 248 Morris Avenue, Grand Rapids, Michigan, Exhibit Manager.

New York State Retail Hardware Association, Inc. Convention headquarters, Eyc Hotel, Albany. Exhibition at State Armory, February 8, 9, 10, 11, 1927. John B. Foley, Secretary, City Bank Building, Syracuse.

North Dakota Retail Hardware Association Convention and Exhibition, Grand Forks, February 8, 9, 10, 1927. C. N. Barnes, Secretary, Grand Forks.

Connecticut Hardware Association Convention, New Haven, February, 1927. Henry S. Hitchcock, Secretary, Woodbury.

Minnesota Retail Hardware Association Convention and Exposition, St. Paul, February 15 to 18, 1927. Manager and Treasurer, Charles H. Casey, Nicollet at 24th Street, Minneapolis, Minnesota.

Pennsylvania and Atlantic Seaboard Hardware Association, Philadelphia Commercial Museum, February 15, 16, 17 and 18, 1927. Sharon E. Jones, Secretary-Treasurer, Wesley Building, Philadelphia, Pennsylvania.

Ohio Hardware Association Convention and Exhibition, Columbus, February 15, 16, 17, 18, 1927. James B. Carson, Secretary, 411 Mutual Home Bldg., Dayton.

Illinois Retail Hardware Association convention and exhibit, Hotel Sherman, Chicago, February 15, 16, 17, 1927. Leon D. Nish, 14 North Spring Street, Elgin, Illinois, Secretary.

California Retail Hardware and Im-

plement Association Convention and Exhibition, Sacramento Memorial Auditorium, February 15, 16, 17, 18, 1927. Hotel headquarters, The Senator. Le Roy Smith, Secretary, 112 Market Street, San Francisco.

South Dakota Retail Hardware Association Convention, headquarters, Coliseum, Sioux Falls, February 22, 23, 24, 1927. Chas. H. Casey, Manager-Treasurer, Nicollet Avenue and 34th Street, Minneapolis.

New England Hardware Dealers' Convention and Exhibition, Mechanics' Building, Boston, Massachusetts, February 22, 23 and 24, 1927. George A. Fiel, Secretary, 80 Federal Street, Boston.

Ohio Sheet Metal Contractors' Convention, Columbus, Ohio, February 23, 24 and 25, 1927. W. C. Abbott, New Southern Hotel, Columbus, Ohio, Secretary.

Michigan Sheet Metal and Roofing Contractors' Association, Pantlind Hotel, Grand Rapids, March 1, 2 and 3, 1927. Frank E. Ederle, Secretary, 1121 Franklin Street, S. E., Grand Rapids.

Retail Hardware Doings

Illinois.

J. E. Strause has purchased the H. D. Stine Hardware Company, Saybrook.

Iowa.

The hardware store of Frank Schaefer has opened for business in the new building at Washburn, erected for that purpose.

George H. Minier has purchased the interest of Mr. Nichol in the Nichol-Minier Hardware Company. Mr. Nichol has retired.

The Andrew Considino Hardware Store, Dumont, suffered a fire loss of \$7,000.

The Carl Harding Hardware Store, Eddyville, was destroyed by fire.

Heinen Brothers of Milo have purchased the Sutton and Chase Hardware Store.

Michigan.

J. H. Temmink and Company Hardware Store sold out to Kingsburg and Seiber, Greenville.

Minnesota.

The Moorehead Hardware Company, 422-24 Central avenue, Moorehead, has been sold to F. M. Schul and M. Nelson.

C. B. Rehberg and R. S. Schulz have purchased the East Side Hardware Store, St. Cloud. This firm is now known as the R. and S. Hardware Company.

Nebraska.

D. H. McNamara has bought the Schrader Hardware Store, Schuyler.

The J. C. Thomas hardware business has been purchased by H. M. Wineland, David City.

North Dakota.

The hardware store of L. W. Weiman of Donnybrook was destroyed by fire.

Oklahoma.

The Dun Hardware Company, Anadarko, was completely destroyed by fire.

Wisconsin.

George Tibbets has purchased an interest in the McCabe Hardware Company, Marion.

C. A. Larson and Arno Theilig, Port Washington, have purchased the Hiller Hardware Company.

1926 Greatest Production Year in History of Steel Industry—Outlook for 1927 Favorable

Pig Iron Market Steady—Light Buying Characterizes Nonferrous Metal Market

PASSING out of the greatest production year in its history the iron and steel industry is swinging into 1927 with solid confidence that consumption will shortly attain the high average of the past year and buying on a comparable scale cannot be long deferred.

Variations in production and shipments the past few weeks and the relatively light commitment of mill capacity are appraised as year-end phases and have not dimmed the general outlook.

New orders and specifications for iron and steel have been measurably higher than production and shipments in the past few days. In some instances, notably pig iron, this improvement has been partially at the expense of price.

Some independent producers have been pressed to maintain 65 to 70 per cent operations but the feeling is general that the low point has been passed and as January opens the betterment will be progressive.

Steel corporation subsidiaries are operating between 75 and 80 per cent.

Pig Iron

At Pittsburgh buying for first half by one concern furnishes the end-of-the-year feature of the pig iron market.

One merchant interest took 1,000 tons of number 2 and 5,000 tons of number 2X on basis of \$18.50. Another is understood to have booked 8,000 tons of one grade and 6,000 tons of another. Smaller sales still command as high as \$19, valley, for the base grade.

One sale of 500 tons of number 2 iron was arranged yesterday. One lot of 300 tons of number 2X brought \$19.50. Other companies now are expecting to issue formal inquiries.

Bessemer is selling in single car-loads at \$20, valley. No large inquiries are out.

While shipments at Chicago slumped in the holiday period and few orders have been closed, the northern pig iron market remains steady.

Release orders for shipments after January 1 have become more numerous and it is indicated that some melters needing iron for operations early in January may be disappointed in their deliveries.

Three Chicago melters have closed for about 1,000 tons of foundry iron, and a similar tonnage of basic has been sold to a Wisconsin melter at \$20, Chicago furnace. Several hundred tons of malleable also have been sold to a Wisconsin melter at \$21, Chicago furnace.

At Birmingham resumption of buying of pig iron is expected this week. A number of consumers lack supplies. Quotations remain firm at \$20, base, Birmingham. Surplus stock at furnaces is light.

Copper

Some producers have eased their price on copper from 13.62½ cents, Connecticut, to 13.50 cents, while others have refused to go quite so low.

Sales at any price have been limited, as users have been fairly well covered through January and most producers have not been pressing the market.

Midwestern prices have held nearer to 13.75 cents than has the eastern market to its base of a week ago.

Zinc

Not much buying in zinc has been done but ever since the surprisingly strong November statistics of a few weeks ago, smelters have been fairly firm in their attitude.

On Monday practically all of them asked 7.05 cents, East St. Louis for prompt prime western, some of them actually being firmer than a few days earlier, despite dullness. Shipments this month are likely to be smaller than last month but even so, smelters are in a good position to accumulate a little more stock.

Lead

A small amount of buying in lead has been done from day to day but the market developed an easier tone today after holding well at 7.80 cents, New York, and 7.65 cents, East St. Louis, for some time past.

Tin

After the market had fallen to 67.00 cents for spot and nearby Straits on Thursday and Friday and selling at this figure early Monday, it began to firm up again.

Spot was the lowest since last September but futures lately were more steady than spot so that the premium on the latter nearly disappeared, with March delivery only about 1 cent under spot or January.

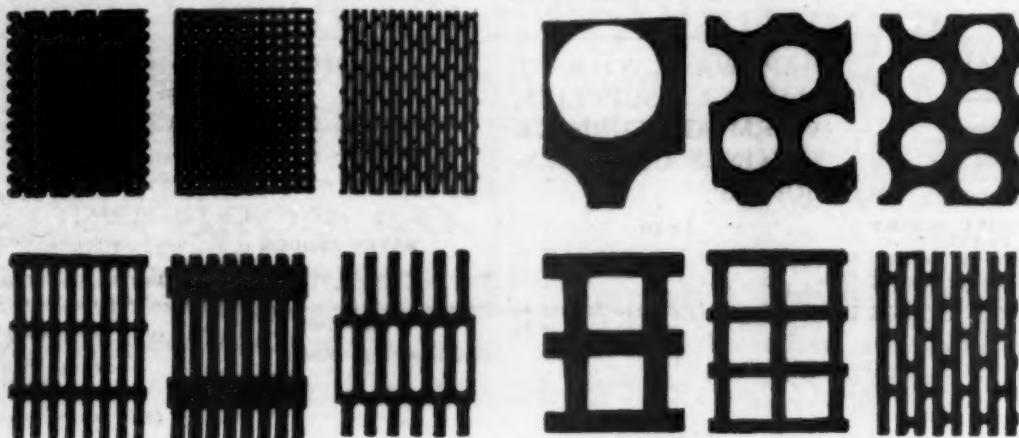
Solder

Chicago warehouse prices on solder are as follows: Warranted 50-50, \$43.25; commercial 45-55, \$40.25, and plumbers', \$37.25, all per 100 pounds.

Old Metals

Wholesale quotations in the Chicago district, which should be considered as nominal, are as follows: Old steel axles, \$16.50 to \$17.00; old iron axles, \$20.50 to \$21.00; steel springs, \$16.00 to \$16.50; No. 1 wrought iron, \$12.00 to \$12.50; No. 1 cast, \$15.75 to \$16.25, all per net tons. Prices for non-ferrous metals are quoted as follows, per pound: Light copper, 9 cents; zinc, 4½ cents, and cast aluminum, 16 cents.

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*All Sizes and Shapes of Holes in all Kinds and Thicknesses of Metal.
Punched Metal Grilles, Register Faces, Ventilators, etc.*

Guard Material for Machines and Belts. We supply a complete line of Accessories
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New York Office: 114 Liberty Street

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ARCHITECTS and Contractors are well acquainted with this long-lasting sheet metal. Our stock includes every size and gauge required by the trade.

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Solder

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WAREHOUSES

NEW YORK CLEVELAND
KANSAS CITY DETROIT
CHICAGO



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Service
of Steel
Users

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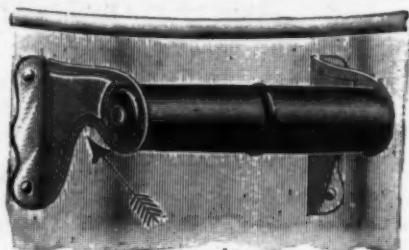
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KEYSTONE BOILER HANDLES



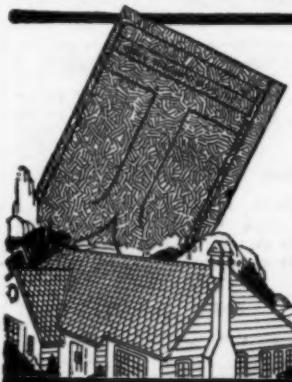
WE make a complete line of Boiler Handles.

Also handles for Boiler Covers. Cut shows No. 40 style. Let us send you samples. Complete catalog on request.

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Warehouses and Factories: 100 to 114 Broad Street
Manufacturers of "Quaker City" line of Meters, Ends, Caps and Outlets



Metal Shingles—Both Painted and Galvanized

CORTRIGHT Painted Shingles come painted red or green. Our galvanized shingles come hand dipped; also stamped from sheets already galvanized. All Cortright Shingles are made in four well designed patterns, and are shown in our booklet "Concerning That Roof." Glad to send a copy.

CORTRIGHT METAL ROOFING CO.
50 N. 23rd Street, Philadelphia
528 S. Clark Street, Chicago

CORTRIGHT METAL SHINGLES

The NEW IMPROVED "STANDARD"

Rotable Ventilator



Patents pending

STANDARD VENTILATOR CO., LEWISBURG, PA.

This favorite cone-shaped ventilator is now improved in several important points. The weight of the ventilator body is now carried on a concave thrust bearing nested in the apex of the conical body. This bearing turns upon the pivot point of the stationary center spindle.

The bronze Guide Bushings are now made of non-corrosive bronze which minimizes friction and any tendency to screech when body is rotating.

There are other new features. Write today for new catalog and price list.

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Charcoal Bright Tin Plate

Up to 4A Grade
Up to 4X Gauge

Imported Dairy Tin Sheets

Up to D4x—48x96 Size

Monel Metal

No. 18 to 24 Gauge
Hot Rolled and Cold Rolled Polished

Osborn's Lead Cote Sheets

No. 18 to 28 Gauge

The J. M. & L. A. OSBORN CO.

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Buffalo Warehouse, 64-68 Rapin Street

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EFFICIENT and reliable for plain or corrugated pipe. Ask for sample and No. 27 Catalogue listing hooks and hangers illustrated.

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PHILADELPHIA, PA.

USED BY THREE GENERATIONS

and still the leading torches and furnaces:

"ALWAYS RELIABLE"



Covered by Patents
No. 87 Qt. No. 88 Pt.

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Seattle, and St. Thomas, Ont.

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All Sizes of Perforations
All Thicknesses of Metal

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NETTING, POULTRY

Galvanized before weaving 57 1/2-5%
Galvanized after weaving 52 1/2-6%

PASTE

Asbestos Dry Paste:
200-lb. barrel \$16.00
100-lb. barrel 8.75
35-lb. pail 3.50
10-lb. bag 1.10
5-lb. bag60
2 1/2-lb. cartons35

PIPE

Conductor
Cor. Rd., Plain Rd. or Sq.
"Interlock" Galvanized
Crated and nested (all gauges) 75-2 1/4%
Crated and not nested (all gauges) 70-15%
"Milcor" "Titlelock" Uniform
Blue Stove
28 gauge, 5 inch U. C. nested 11.00
28 gauge, 6 inch U. C. nested 12.00
28 gauge, 7 inch U. C. nested 14.00
30 gauge, 5 inch U. C. nested 10.00
30 gauge, 6 inch U. C. nested 12.50
30 gauge, 7 inch U. C. nested 13.00

T-Joint Made up

6-inch, 28 ga. Per 100 \$2.50

Furnace Pipe

Double Wall Pipe and Pipe Fittings 40%
Single Wall Pipe, Round Iron Pipe Galvanized 40%
Galvanized and Black Fittings 40%
Milcor Galvanized Pipe and Fittings 40%

Lead

Per 100 lbs. \$12.50

POKERS, STOVE

Wr't Steel, str't or bent, per doz. \$0.75
Nickel Plated, coll. handles, per doz. 1.10

POKERS, FURNACE

Each \$0.50

PULLEYS

Furnace Tackl. per doz. \$0.80
Furnace Scrav. (enameld) per doz. 75

VENTILATING Register

Per gross \$0.00
Small, per pair 30
Large, per pair 60

PUTTY

Commercial Putty, 100-lb. Kits \$3.40

QUADRANTS

Malleable Iron Damper 10%

REDUCERS—Oval Stove Pipe

Per Doz. 7-6, 1 doz. in carton \$2.00

BASEBOARD REGISTERS

Excelsior 50%

FLOOR REGISTERS AND BORDERS

Cast Iron 20%

Steel and Semi-Steel 40%

In lots less than 50 33 1/3%

Baseboard 40%

In lots less than 50 33 1/3%

Adjustable Ceiling Ventilators 40%

REGISTER FACES—Cast and Steel

Japanned, Bronzed and Plated, 4x6 to 14x14 40%

In lots less than 50 33 1/3%

Large Register Faces—Cast, 14x14 to 28x42 50%

Large Register Faces—Steel, 14x14 to 28x42 65%

In lots less than 50 50%

RIDGE ROLL

Milcor

Galv., Plain Ridge Roll, b'dld 75-10-5%

Galv., Plain Ridge Roll, crated 75-10-10%

Globe Finials for Ridge Roll 50%

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Per Square
Best grade, slate surf. prep'd \$2.20
Best talc surfaced 2.65
Medium talc surfaced 2.00
Light talc surfaced 1.20
Red Rosin Sheeting, per ton 57.00

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Sheet Metal
7. 1 1/2x1, per gross 30.50
No. 10, 1 1/2x1/16, per gross 65
No. 14, 1 1/2x1, per gross 85

SHEARS, TINNERS' & MACHINISTS'

Viking \$22.00
Lennox Throatless

No. 18 35.00
Shear blades 10.00
(f. o. b. Marshalltown, Iowa.)

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No. 1 "Gem," floor \$12.00 doz.
No. 2 "Gem" wall 6.00 doz.

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Galv. 28 Gauge, Plain or corg. round flat crimp 60%
26 gauge round flat crimp 45%
24 gauge round flat crimp 15%

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Clover Leaf 40 & 10%
National 40 & 10%
Star 50%
Milcor Net

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Steel and Iron Net
(Add for bluing, \$3 per doz. net.)

Mitre Net
Try Net
Try and Bevel Net

Try and Mitre Net
Fox's per doz. \$6.00
Winterbottom's 10%

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Common per doz. \$1.10
Gem, No. 1 per doz. 1.10
Gem, flat, No. 1 per doz. 1.00

VENTILATORS

Standard 30 to 40"

WIRE

Plain annealed wire, No. 8, per 100 lbs. \$3.00
Galvanized barb wire, per 100 lbs. 3.30
Wire cloth—Black painted, 12-mesh, per 100 sq. ft. 1.65
Cattle Wire—galvanized catch weight spool, per 100 lbs. 3.75
Galvanized Hog Wire, 30 red spool. 3.25
Galvanized plain wire, No. 9, per 100 lbs. 2.50
Stove Pipe, per stone 1.10

WRINGERS

No. 700, Guarantee each \$5.40
No. 770, Bicycle each 4.95
No. 870, Domestic each 4.65
No. 110, Brighton each 4.00
No. 750, Guarantee each \$4.40
No. 740, Bicycle each 4.95
No. 22, Pioneer each 2.65
No. 3, Superb each 3.90

WIRE

electrical, rope, barbed, plain, nails (bright and coated), tacks, spikes, bale ties, hoops, springs, netting, wire fences, steel posts, steel gates, trolley wire, rail bonds, flat wire, cold rolled strip steel, piano wire, round and odd-shape wire, screw stock, concrete reinforcement. Aerial tramways.

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Any Length or Width

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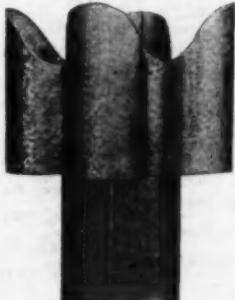
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Made of prensed steel and equipped with hold-down. Blades of highest grade crucible steel. Most indispensable high grade shear made. Equal to other shear's selling at over twice the price. **ORDER YOURS TODAY.**

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FOUR LEAF CLOVER CHIMNEY TOP

Prevents down draft without a tall stack. No moving parts to stick, wear out or blow off.

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MAKE YOUR OWN ELBOWS—

Any Size in Two Minutes
with this Machine.

JUST take your straight
J pipe—fasten the form or
jig to it and in two min-
utes you have your 3 or 4 piece adjustable elbow
all ready for use and any size you want.

PURNELL ELBOW EDGING and CUTTING MACHINE

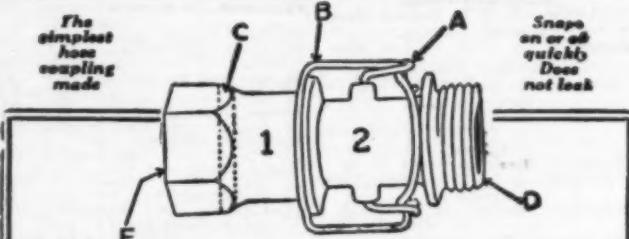
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7 in. to
36 in.
Elbows
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gauge
and
lighter



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and circulars.

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made in all standard sizes for No.
14 and lighter gauge sheets. With
it, sheets can be squared, trimmed
or slit.

We make a complete line of
shears, punches and bending rolls,
all sizes for hand or belt drive.
Write for Catalog "S."

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Plecker's Galvanized Eave Trough and Corrugated Expanding Conductors

Made of
Keystone
Copper Bearing
Steel



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Lasts longer
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Brakes—Cornice.
Dreis & Krump Mfg. Co.,
Chicago, Ill.

Brass and Copper.
Copper & Brass Research As-
sociation, New York

Merchant & Evans Co.,
Philadelphia, Pa.

Cans—Garbage.
Osborn Co., The J. M. & L. A.,
Cleveland, Ohio

Castings—Malleable.
Fanner Mfg. Co., Cleveland, Ohio

Ceilings—Metal.
Friedley-Voshardt Co.,
Chicago, Ill.

Milwaukee Corrugating Co.,
Milwaukee, Wis.

Wheeling Corrugating Co.,
Wheeling, W. Va.

Chaplets.
Fanner Mfg. Co., Cleveland, Ohio

Chain—Seah.
Parker-Kalon Corp.,
New York, N. Y.

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G. O. Sapp, Tallula, Ill.

Standard Ventilator Co.,
Lewisburg, Pa.

Cleaners—Furnace.
Sturtevant Co., B. F., Boston, Mass.

Cleaners—Suction.
Sturtevant Co., B. F., Boston, Mass.

Clinker Tongs.
Federal Mfg. Co., Holland, Mich.

Coal Chutes.
Majestic Co., The,
Huntington, Ind.

Copper.
Copper & Brass Research As-
sociation, New York

Cornices.
Friedley-Voshardt Co.,
Chicago, Ill.

Milwaukee Corrugating Co.,
Milwaukee, Wis.

Cut-offs—Rain Water.
Milwaukee Corrugating Co.,
Milwaukee, Wis.

Dampers.
S. M. Howes Co.,
Charlestown, Mass.

Damper Clips.
S. M. Howes Co.,
Charlestown, Mass.

Diffuser—Air Duct.
Aeolus-Dickinson Co.,
Chicago, Ill.

Doors—Metal.
Lupton's Sons Co., David,
Philadelphia, Pa.

Eaves Trough.
Berger Bros. Co.,
Philadelphia, Pa.

Berger Co., L. D.,
Philadelphia, Pa.

Clark-Smith Hardware Co.,
Peoria, Ill.

Lupton's Sons Co., David,
Philadelphia, Pa.

Milwaukee Corrugating Co.,
Milwaukee, Wis.

New Jersey Zinc Sales Co., The,
New York, N. Y.

Wheeling Corrugating Co.,
Wheeling, W. Va.

Elbows and Shoes—Conductor.
American Rolling Mill Co.,
Middletown, Ohio

Dieckmann Co., Ferdinand,
Cincinnati, Ohio

Double-Duty Mfg. Co., Aurora, Ill.

Lupton's Sons Co., David,
Philadelphia, Pa.

Milwaukee Corrugating Co.,
Milwaukee, Wis.

Enamel Wire.
Lalance & Gosselin Mfg. Co.,
Chicago, Ill.

Wood Faces—Cold Air.
American Wood Register Co.,
Plymouth, Ind.

Eaglesfield Ventilator Co.,
Indianapolis, Ind.

Marsh Lumber Co., Dover, Ohio

Milwaukee Corrugating Co.,
Milwaukee, Wis.

McClure Builders Supply Co.,
East Palestine, Ohio

Fences.
American Steel & Wire Co.,
Chicago, Ill.

Flue Thimbles.
Milwaukee Corrugating Co.,
Milwaukee, Wis.

Furnace Cement—Asbestos.
Connors Paint Mfg. Co., Wm.

Johnson Co., Inc., Chas.

Peoria, Ill.

Milwaukee Corrugating Co.,
Milwaukee, Wis.

Pecora Paint Co.,
Philadelphia, Pa.

Sall Mountain Co.,
Chicago, Ill.

Technical Products Co.,
Pittsburgh, Pa.

Furnace Cleaners.
Sturtevant Co., B. F., Boston, Mass.

Furnace Fans.
A. H. Robinson Company,
Cleveland, Ohio

Sturtevant Co., B. F., Boston, Mass.

Warm Air Furnace Fan Co., The,
Cleveland, Ohio

Furnace Rings.
Milwaukee Corrugating Co.,
Milwaukee, Wis.

Walworth Run Fdy. Co.,
Cleveland, Ohio

Furnace—Warm Air.
American Furnace Co.,
St. Louis, Mo.

American Foundry & Furnace
Co., Bloomington, Ill.

Brillion Iron Works,
Brillion, Wis.

Carr Supply Co., Chicago, Ill.

Chicago Furnace Supply Co.,
Chicago, Ill.

Cleveland Co-operative Stove Co.,
Cleveland, Ohio

Colburn Heater Co., Chicago, Ill.

Excelsior Steel Furnace Co.,
Chicago, Ill.

Floral City Heater Co.,
Monroe, Mich.

Forest City Fdy. & Mfg. Co.,
Cleveland, Ohio

Hall-Neal Furnace Co.,
Indianapolis, Ind.

Henry Furnace & Fdy. Co.,
Cleveland, Ohio

Hero Furnace Co., Sycamore, Ill.

Hess-Snyder Co., Massillon, Ohio

Homer Furnace Co.,
Coldwater, Mich.

International Heater Co.,
Utica, N. Y.

Keith Furnace Co.,
Des Moines, Ia.

Kruse Co., Indianapolis, Ind.

Lamneck Co., W. E.,
Columbus, Ohio

Langenberg Mfg. Co.,
St. Louis, Mo.

Lenox Furnace Co.,
Syracuse, N. Y.

Liberty Foundry Co.,
St. Louis, Mo.

Majestic Co., The,
Huntington, Ind.

Marshalltown Heater Co.,
Marshalltown, Iowa

May-Fiebeger Furnace Co.,
Newark, Ohio

Meyer Furnace Co., The

Monitor Furnace Co.,
Cincinnati, Ohio

Mt. Vernon Furnace & Mfg. Co.,
Mt. Vernon, Ill.

Mueller Furnace Co., L. J.,
Milwaukee, Wis.

Oakland Foundry Co.,
Belleville, Ill.

Peerless Fdy. Co.,
Indianapolis, Ind.

Peninsular Stove Co.,
Detroit, Mich.

Waterman-Waterbury Co.,
Minneapolis, Minn.

Heaters—School Room.

Floral City Heater Co.,
Monroe, Mich.

Hero Furnace Co., Sycamore, Ill.

International Heater Co.,
Utica, N. Y.

Meyer Furnace Co., The

Standard Furnace & Supply Co.,
Omaha, Neb.

Waterman-Waterbury Co.,
Minneapolis, Minn.

Hoeks—Conductor.

Berger Co., L. D.,
Philadelphia, Pa.

Hotels.

Fort Shelby Hotel,
Detroit, Mich.

Humidifiers.

Robinson Furnace Co.,
Chicago, Ill.

Roemer Heating Co.,
Cleveland, Ohio

Jobbers—Hardware.

Clark-Smith Hardware Co.,
Peoria, Ill.

Kitchen Utensils.

Lalance & Gosselin Mfg. Co.,
Chicago, Ill.

Lath—Expanded Metal.

Milwaukee Corrugating Co.,
Milwaukee, Wis.

Machines—Crimping.

Bertsch & Co.,
Cambridge City, Ind.

Machinery—Culvert.

Bertsch & Co.,
Cambridge City, Ind.

Security Stove & Mfg. Co.,
Kansas City, Mo.

Simplex Furnace Co.,
Racine, Wis.

Standard Foundry & Mfg. Co.,
DeKalb, Ill.

Standard Furnace & Supply Co.,
Omaha, Neb.

St. Louis Heating Co.,
St. Louis, Mo.

Success Heater Mfg. Co.,
Des Moines, Iowa

Thomas & Armstrong Co.,
London, Ohio

Thatcher Co.,
Chicago, Ill.

XXTH Century Heat. & Vent. Co.,
Akron, Ohio

Utica Heater Co.,
Utica, N. Y.

Waterman-Waterbury Co.,
Minneapolis, Minn.

Western Steel Products Co.,
Duluth, Minn.

Wise Furnace Co.,
Akron, Ohio

Williamson Heater Co.,
Cincinnati, Ohio

Garages—Metal.

Milwaukee Corrugating Co.,
Milwaukee, Wis.

Gas (Acetylene) Dissolved.

Prest-O-Lite Co., Inc.,
New York, N. Y.

Gas (Nitrogen).

Linde Air Products Co.,
New York, N. Y.

Gas (Oxygen).

Linde Air Products Co.,
New York, N. Y.

Glass—Wire.

Lupton's Sons Co., David,
Philadelphia, Pa.

Grilles.

Diamond Mfg. Co., Wyoming, Pa.

Harrington & King Perforating
Co., Chicago, Ill.

Hart & Cooley Co.,
New Britain, Conn.

Independent Register & Mfg. Co.,
Cleveland, Ohio

Tuttle & Bailey Mfg. Co.,
Chicago, Ill.

Grilles—Store Front.

Tuttle & Bailey Mfg. Co.,
Chicago, Ill.

Guards—Machine and Belt.

Harrington & King Perforating
Co., Chicago, Ill.

Handles—Boiler.

Berger Bros. Co.,
Philadelphia, Pa.

Hangers—Eaves Trough.

Berger Co., L. D.,
Philadelphia, Pa.

Milwaukee Corrugating Co.,
Milwaukee, Wis.

Hunters—Cabinet.

Gray & Dudley Co.,
Nashville, Tenn.

Majestic Co., The,
Huntington, Ind.

Mueller Furnace Co., L. J.,
Milwaukee, Wis.

Peninsular Stove Co.,
Detroit, Mich.

Waterman-Waterbury Co.,
Minneapolis, Minn.

Heaters—School Room.

Floral City Heater Co.,
Monroe, Mich.

Hero Furnace Co., Sycamore, Ill.

International Heater Co.,
Utica, N. Y.

Meyer Furnace Co., The

Peoria, Ill.

Standard Furnace & Supply Co.,
Omaha, Neb.

Waterman-Waterbury Co.,
Minneapolis, Minn.

Hoeks—Conductor.

Berger Co., L. D.,
Philadelphia, Pa.

Hotels.

Fort Shelby Hotel,
Detroit, Mich.

Humidifiers.

Robinson Furnace Co.,
Chicago, Ill.

Roemer Heating Co.,
Cleveland, Ohio

Jobbers—Hardware.

Clark-Smith Hardware Co.,
Peoria, Ill.

Kitchen Utensils.

Lalance & Gosselin Mfg. Co.,
Chicago, Ill.

Lath—Expanded Metal.

Milwaukee Corrugating Co.,
Milwaukee, Wis.

Machines—Crimping.

Bertsch & Co.,
Cambridge City, Ind.

Machinery—Culvert.

Bertsch & Co.,
Cambridge City, Ind.

Machines—Tinsmiths.

Bertsch & Co.,
Cambridge City, Ind.

Chicago Elbow Machine Co.,
Oak Park, Ill.

Dreis & Krump Mfg. Co.,
Chicago, Ill.

Marshalltown Mfg. Co.,
Marshalltown, Iowa

Osborn Co., The J. M. & L. A.,
Cleveland, Ohio

Peck, Stow & Wilcox Co.,
Southampton, Conn.

Unishear Co., The New York,
Conn.

Whitney Mfg. Co., W. A.,
Rockford, Ill.

Whitney Metal Tool Co.,
Rockford, Ill.

Mailing Lists.

R. L. Polk Co.,
Detroit, Mich.

Ross-Gould Co.,
St. Louis, Mo.

Metals—Perforated.

Diamond Mfg. Co., Wyoming, Pa.

Harrington & King Perforating
Co., Chicago, Ill.

Miters.

Friedley-Voshardt Co.,
Chicago, Ill.

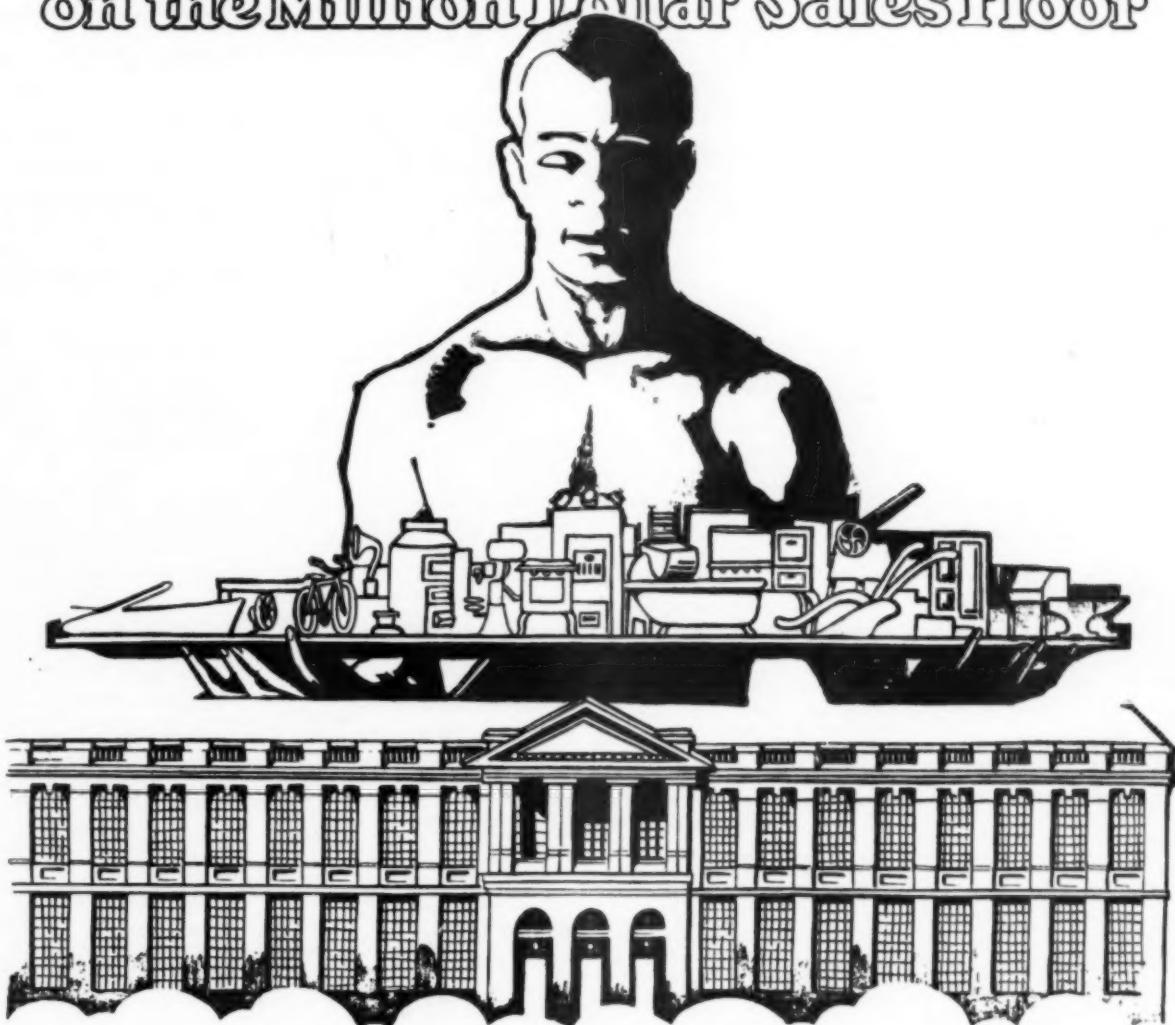
Milwaukee Corrugating Co.,
Milwaukee, Wis.

Miters—Eaves Trough.

Lupton's Sons Co., David,
Philadelphia, Pa.

HARDWARE INDUSTRY

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BUYERS' DIRECTORY

Posts—Steel Fence.
American Steel & Wire Co.,
Chicago, Ill.

Punches.
Bertsch & Co.,
Cambridge City, Ind.
Parker-Kalon Corp.,
New York, N. Y.
Peck, Stow & Wilcox Co.,
Southington, Conn.
Whitney Mfg. Co., W. A.,
Rockford, Ill.
Whitney Metal Tool Co.,
Rockford, Ill.

Punches—Combination Bench and Hand.
Parker-Kalon Corp.,
New York, N. Y.
Whitney Metal Tool Co.,
Rockford, Ill.
Whitney Mfg. Co., W. A.,
Rockford, Ill.

Punches—Hand.
Whitney Metal Tool Co.,
Rockford, Ill.
Whitney Mfg. Co., W. A.,
Rockford, Ill.

Putty—Stove.
Connors Paint Mfg. Co., Wm.,
Troy, N. Y.
Pecora Paint Co.,
Philadelphia, Pa.

Quadrants—Damper.
Parker-Kalon Corp.,
New York, N. Y.

Radiator Cabinets.
Tayco Register Shield Co.,
Menasha, Wis.
Tuttle & Bailey Mfg. Co.,
Chicago, Ill.

Ranges—Combination Gas & Coal.
Quick Meal Stove Co.,
St. Louis, Mo.
Thatcher Co.,
Newark, N. J.

Ranges—Gas.
Quick Meal Stove Co.,
St. Louis, Mo.

Registers—Warm Air.
American Wood Register Co.,
Plymouth, Ind.
Auer Register Co., Cleveland, O.
Carr Supply Co., Chicago, Ill.
Chicago Furnace Supply Co.,
Chicago, Ill.

Eaglesfield Ventilator Co.
Indianapolis, Ind.
Excelsior Steel Furnace Co.,
Chicago, Ill.

Hart & Cooley Co.
New Britain, Conn.
Henry Furnace & Fdy. Co.,
Cleveland, Ohio

Independent Register & Mfg. Co.
Cleveland, Ohio
Johnson Co., Inc., Chas.,
Peoria, Ill.

Lamneck & Co., W. E.
Columbus, Ohio
Majestic Co., The,
Huntington, Ind.

Meyer & Bro. Co., F. Peoria, Ill.
Milwaukee Corrugating Co.,
Milwaukee, Wis.

Mueller Furnace Co., L. J.
Milwaukee, Wis.
Quick Furnace & Supply Co.,
Des Moines, Ia.

Robinson Furnace Co.
Chicago, Ill.
Rock Island Register Co.,
Rock Island, Ill.

Standard Furnace & Supply Co.
Omaha, Neb.

Stearns Register Co.
Detroit, Mich.
Symonds Register Co.,
St. Louis, Mo.

Tuttle & Bailey Mfg. Co.
Chicago, Ill.
United States Register Co.,
Battle Creek, Mich.

Walworth Run Fdy. Co.
Cleveland, Ohio
Waterloo Register Co.,
Waterloo, Iowa

Registers—Wood.
American Wood Register Co.,
Plymouth, Ind.

Auer Register Co.
Cleveland, O.
Chicago Furnace Supply Co.,
Chicago, Ill.

Eaglesfield Ventilator Co.
Indianapolis, Ind.
Marsh Lumber Co., Dover, Ohio
McClure Builders Supply Co.,
East Palestine, Ohio

Repairs—Stove and Furnace.
Hessler Co., H. E.,
Syracuse, N. Y.
Niehaus Furnace Repair Co.,
Cleveland, Cincinnati, O.
Northwestern Stove Repair Co.,
Chicago, Ill.

Ridging.
American Rolling Mill Co.,
Middletown, Ohio
Lupton's Sons Co., David,
Philadelphia, Pa.
Milwaukee Corrugating Co.,
Milwaukee, Wis.

Rivets—Stove.
The Kirk-Latty Co.,
Cleveland, Ohio
Lamson & Sessions Co.,
Cleveland, Ohio

Roasters.
Lalance & Grosjean Mfg. Co.,
Chicago, Ill.

Rods—Stove.
The Kirk-Latty Co.,
Cleveland, Ohio
Lamson & Sessions Co.,
Cleveland, Ohio

Rolls—Forming.
Bertsch & Co.,
Cambridge City, Ind.

Roofing Cement.
Connors Paint Mfg. Co., Wm.,
Troy, N. Y.

Roof—Flashing.
Hessler Co., H. E., Syracuse, N. Y.
Milwaukee Corrugating Co.,
Milwaukee, Wis.

Roofing—Iron and Steel.
American Roofing Mill Co.,
Middletown, Ohio
Cortright Metal Roofing Co.,
Philadelphia, Pa.

Friedley-Voshardt Co.
Chicago, Ill.
Inland Steel Co.,
Chicago, Ill.

Merchant & Evans Co.
Philadelphia, Pa.
Milwaukee Corrugating Co.,
Milwaukee, Wis.

**Wheeling Corrugating Co.,
Wheeling, W. Va.**

Roofing—Zinc.
New Jersey Zinc Sales Co., The,
New York, N. Y.

Rubbish Burners.
Hart & Cooley Co.,
New Britain, Conn.

Sal—Ammoniac.
Special Chemicals Co.,
Waukegan, Ill.

Schools—Sheet Metal Pattern Drafting.
St. Louis Technical Institute,
St. Louis, Mo.

Screws—Sheet Metal.
Parker-Kalon Corp.,
New York, N. Y.

Screens—Perforated Metal.
Harrington & King Perforating
Co., Chicago

Shears—Hand and Power.
Double-Duty Mfg. Co.,
Marshalltown, Iowa

**Peck, Stow & Wilcox Co.,
Southington, Conn.**

Unishear Co., The, New York
Viking Shear Co., Erie, Pa.

Sheets—Black and Galvanized.
American Rolling Mill Co.,
Middletown, Ohio

Davis Co., Inc., C. S. Chicago, Ill.
Inland Steel Co., Chicago, Ill.

**Merchant & Evans Co.,
Philadelphia, Pa.**

**Milwaukee Corrugating Co.,
Milwaukee, Wis.**

Osborn Co., The J. M. & L. A.
Cleveland, Ohio

Taylor Co., N. & G.
Philadelphia, Pa.

**Wheeling Corrugating Co.,
Wheeling, W. Va.**

Stamps—Metal.
American Tube & Stamping Co.,
Bridgeport, Conn.

Dunning, Inc., E. C. Milwaukee, Wis.
Stearns Register Co.,
Detroit, Mich.

Stove Pipe Reducers.
Milwaukee Corrugating Co.,
Milwaukee, Wis.

Stoves—Camp.
Quick Meal Stove Co.,
St. Louis, Mo.

Stoves—Gasoline and Oil.
Quick Meal Stove Co.,
St. Louis, Mo.

Stoves and Ranges.
Cleveland Co-operative Stove Co.,
Cleveland, Ohio

**Oakland Foundry Co.,
Belleville, Ill.**

**Peninsular Stove Co.,
Detroit, Mich.**

**Quick Meal Stove Co.,
St. Louis, Mo.**

Thatcher Co., Newark, N. J.

Sheets—Iron.
American Rolling Mill Co.,
Middletown, Ohio

**Merchant & Evans Co.,
Philadelphia, Pa.**

Sheets—Tin.
Davis Co., Inc., C. S., Chicago, Ill.

**Merchant & Evans Co.,
Philadelphia, Pa.**

Taylor Co., N. & G.
Philadelphia, Pa.

Sheets—Zinc.
New Jersey Zinc Sales Co., The,
New York, N. Y.

Shields—Register.
Beh & Co., New York, N. Y.

**Tayco Register Shield Co.,
Menasha, Wis.**

Shingles and Tiles—Metal.

**Cortright Metal Roofing Co.,
Philadelphia, Pa.**

**Milwaukee Corrugating Co.,
Milwaukee, Wis.**

**Wheeling Corrugating Co.,
Wheeling, W. Va.**

Shingles—Asphalt.

Sail Mountain Co., Chicago, Ill.

Shingles—Zinc.

**Milwaukee Corrugating Co.,
Milwaukee, Wis.**

Sifters—Ash.

**Diener Mfg. Co., G. W.,
Chicago, Ill.**

Sky Lights.

**Lupton's Sons Co., David,
Philadelphia, Pa.**

**Milwaukee Corrugating Co.,
Milwaukee, Wis.**

Smoke Pipe—Cast Iron.

**Waterloo Register Co.,
Waterloo, Iowa**

Snips.

**Peck, Stow & Wilcox Co.,
Southington, Conn.**

Soldier.

Chicago Solder Co., Chicago, Ill.

**Double-Duty Elbow Co.,
Aurora, Ill.**

**Milwaukee Corrugating Co.,
Milwaukee, Wis.**

Solder—Aluminum.

**Ziener Aluminum Solder Co.,
Rockford, Ill.**

Soldering Furnaces.

Bernz Co., Otto, Newark, N. J.

**Burgess Soldering Furnace Co.,
Columbus, Ohio**

**Clayton & Lambert Mfg. Co.,
Detroit, Mich.**

**Diener Mfg. Co., G. W.,
Chicago, Ill.**

**Double Blast Mfg. Co.,
North Chicago, Ill.**

**Quick Meal Stove Co.,
St. Louis, Mo.**

Soldering Supplies.

Double-Duty Elbow Co., Aurora, Ill.

**Special Chemicals Co.,
Waukegan, Ill.**

Specialties—Hardware.

**Diener Mfg. Co., G. W.,
Chicago, Ill.**

Hessler Co., H. E., Syracuse, N. Y.

Stars—Hard Iron Cleaning.

Fanner Mfg. Co., Cleveland, Ohio

Statuary.

**Friedley-Voshardt Co.,
Chicago, Ill.**

**Gerock Bros. Mfg. Co.,
St. Louis, Mo.**

Stampings—Metal.

**American Tube & Stamping Co.,
Bridgeport, Conn.**

Dunning, Inc., E. C. Milwaukee, Wis.

**Stearns Register Co.,
Detroit, Mich.**

Stove Pipe Reducers.

**Milwaukee Corrugating Co.,
Milwaukee, Wis.**

Stoves—Camp.

**Quick Meal Stove Co.,
St. Louis, Mo.**

Stoves—Gasoline and Oil.

**Quick Meal Stove Co.,
St. Louis, Mo.**

Stoves and Ranges.

**Cleveland Co-operative Stove Co.,
Cleveland, Ohio**

**Oakland Foundry Co.,
Belleville, Ill.**

**Peninsular Stove Co.,
Detroit, Mich.**

**Quick Meal Stove Co.,
St. Louis, Mo.**

Thatcher Co., Newark, N. J.

Tasks, Staples, Spikes.
American Steel & Wire Co.,
Chicago, Ill.

Tile Cement—Elastic.
Pecora Paint Co.,
Philadelphia, Pa.

Timplate.
Davis Co., Inc., C. S., Chicago, Ill.
Milwaukee Corrugating Co.,
Milwaukee, Wis.

**Osborn Co., The J. M. & L. A.,
Cleveland, Ohio**

**Taylor Co., N. & G.,
Philadelphia, Pa.**

Tools—Tinsmith's.
Bertsch & Co.,
Cambridge City, Ind.

**Chicago Elbow Machine Co.,
Oak Park, Ill.**

**Double-Duty Mfg. Co.,
Aurora, Ill.**

**Dreis & Krump Mfg. Co.,
Chicago, Ill.**

**Marshalltown Mfg. Co.,
Marshalltown, Iowa**

**Osborn Co., The J. M. & L. A.,
Cleveland, Ohio**

**Peck, Stow & Wilcox Co.,
Southington, Conn.**

Unishear Co., The New York, N. Y.

Viking Shear Co., Erie, Pa.

**Whitney Mfg. Co., W. A.,
Rockford, Ill.**

**Whitney Metal Tool Co.,
Rockford, Ill.**

Torches.

Bernz Co., Otto, Newark, N. J.

**Burgess Soldering Furnace Co.,
Columbus, Ohio**

**Clayton & Lambert Mfg. Co.,
Detroit, Mich.**

**Diener Mfg. Co., G. W.,
Chicago, Ill.**

**Double Blast Mfg. Co.,
North Chicago, Ill.**

**Quick Meal Stove Co.,
St. Louis, Mo.**

Trimmings—Store.

Fanner Mfg. Co., Cleveland, Ohio

Ventilators.

Arex Company, Chicago, Ill.

Aeolus Dickinson Co., Chicago, Ill.

Berger Bros. Co., Philadelphia, Pa.

**Friedley-Voshardt Co.,
Chicago, Ill.**

Kernchen Co., Chicago, Ill.

**Lupton's Sons Co., David,
Philadelphia, Pa.**

**Milwaukee Corrugating Co.,
Milwaukee, Wis.**

**Royal Ventilator Co.,
Philadelphia, Pa.**

**Standard Ventilator Co.,
Lewisburg, Pa.**

Sturtevant Co., B. F., Boston, Mass.

Ventilators—Ceiling.

**Eaglefield Ventilator Co.,
Indianapolis, Ind.**

**Hart & Cooley Co.,
New Britain, Conn.**

**Henry Furnace & Fdy. Co.,
Cleveland, Ohio**

**Independent Register & Mfg. Co.,
Cleveland, Ohio**

**Tuttle & Bailey Mfg. Co.,
Cleveland, Ohio**

Sturtevant Co., B. F., Boston, Mass.

Windows—Steel.

**Lupton's Sons Co., David,
Philadelphia, Pa.**

Wire—Electrical.

**American Steel & Wire Co.,
Chicago, Ill.**

Wire Hoops.

**American Steel & Wire Co.,
Chicago, Ill.**

Wire Rope.

**American Steel & Wire Co.,
Chicago, Ill.**

Wrenches.

**Coes Wrench Co.,
Worcester, Mass.**

Zinc.

**Merchant & Evans Co.,
Philadelphia, Pa.**

**New Jersey Zinc Co., The,
New York, N. Y.**

WANTS AND SALES

Any yearly subscriber to AMERICAN ARTISAN may insert advertisements of not more than fifty words in our Want and Sales Columns WITHOUT CHARGE.

Such advertisements, however, must be limited to help or situation wanted, tools or equipment for sale, to exchange or to buy, business for sale or location desired.

BUSINESS CHANCES

LIGHTNING RODS—Dealers who are selling Lightning Protection will make money by writing us for our latest Factory to Dealer Prices. We employ no salesmen and save you all overhead charges. Our Pure Copper Cable is endorsed by the Mutual Insurance Companies and hundreds of reliable dealers. Write today for samples and prices. L. K. DIDDIE COMPANY, Marshfield, Wisconsin.

For Sale—Furnace manufacturer desires to sell his entire plant, patents on furnace and equipment to make eleven furnaces per day. Eight years of service by hundreds of users has proven it to be a great heater and uses a third less fuel than any other type. Owing to health will sell at an extremely low figure or will take in a partner with \$25,000. Address C-8, care AMERICAN ARTISAN, 620 South Michigan Avenue, Chicago, Illinois. 25-3t

For Sale—One Arcola Parlor Heater No. 60. Price \$75.00. Terms. Cash with order will send bill of lading with sight draft attached. This heater is absolutely new. It has never been moved off our floor. The porcelain casing is not chipped. It is complete with automatic regulator altitude gauge thermometer and expansion tank fittings. We have never been able to sell this heater and would like to get part of our money out of it. L. Wilson & Co., Dunlap, Iowa. 23-3t

For Sale—Roofing and general sheet metal business, located in the best business section of Minneapolis, Minnesota. Will sell all or one-half interest. Business has a very desirable lease on the property it occupies. This is an excellent opportunity for a good man. Address C-10, care AMERICAN ARTISAN, 620 South Michigan Avenue, Chicago, Illinois. 25-3t

For Sale—A well selected stock of hardware in one of the best county seat towns in northwestern Iowa. Brick building, 29x90, has housed hardware store for over thirty-five years. Buyer can have entire building except for about thirty feet on second floor. Ill health compels owner's retirement. No trade. Address C-15, care AMERICAN ARTISAN, 620 South Michigan Avenue, Chicago, Illinois. 26-3t

Middle west jobber of furnaces, fittings and oil burners (Oil-O-Matic) wishes to lease or sell its retail department, in city of 60,000, doing a business of \$40,000 per year. Will carry 80 per cent of the investment for right man. Address C-20, care AMERICAN ARTISAN, 620 South Michigan Avenue, Chicago, Illinois. 1-3t

For Sale—A money maker. A good sheet metal, radiator, plumbing and furnace shop. No dead stock. Some auto oils, tinware, some hardware, etc. Reason for selling, other business. First offer for \$1,000 takes it. Box 175, Acme Sheet Metal Works, Parkston, South Dakota. 1-3t

BUSINESS CHANCES

For Sale—Sheet metal shop and building 32x66 frame building in center of city. Business has been established 17 years. This is the town where Ford is building the large power dam. Building, stock and tools \$10,700. \$3,000 down, balance to suit purchaser. Address Wm. P. Blair & Son, 14-16 S. Huron St., Ypsilanti, Mich. 25-3t

For Sale—Sheet metal shop. Good chance for combination worker. Tinning and plumbing. Will not take much money to handle this shop. Write for particulars. Address C-14, care AMERICAN ARTISAN, 620 South Michigan Avenue, Chicago, Illinois. 26-3t

Wanted—To buy sheet metal and furnace business in a good prosperous town. State reason for selling. Population and particulars. Address C-13, care of AMERICAN ARTISAN, 620 South Michigan Avenue, Chicago, Illinois. 26-3t

HELP WANTED

Wanted—A first class sheet metal worker with experience with factory work, heavy sheet iron, blue prints, also pattern cutting, etc. Steady job year round for man who can qualify himself. Don't answer this ad unless fully experienced. Address Q-4, care AMERICAN ARTISAN, 620 South Michigan Avenue, Chicago, Illinois. 24-3t

Would like to get in touch with a first class warm air furnace and outdoor man to do furnace, guttering and roofing work. A married man preferred who would be interested in making his home in the thriving city of Chattanooga, Tennessee, a population over 100,000. Steady job for right party. Stutz Brothers, Chattanooga, Tennessee. 25-3t

Wanted—First-class sheet metal worker that can lay out his own work. Good job for right man that is in position to come at once. If George Collins reads this ad wire us. Address Griffith & Griffith Company, P. O. Box 194, Charleston, West Virginia. 1-3t

Wanted—Experienced sheet metal man, able to lay out work and to handle from 20 to 25 men. Best opportunity for the right man. Address C-18, care AMERICAN ARTISAN, 620 South Michigan Avenue, Chicago, Illinois. 1-3t

SITUATION WANTED

Situation Wanted—By furnace man and sheet metal worker with 15 years' experience. Can do engineering from theory and from practical knowledge. Can cut most patterns, make up work and erect same in a workmanlike manner. Have had experience in factory work sheet metal department of furnace factory and on maintenance as well. Address C-9, care AMERICAN ARTISAN, 620 South Michigan Avenue, Chicago, Illinois. 25-3t

Situation Wanted—An A-1 sheet metal worker, layout man, foreman and engineer with 25 years' experience, seeks position at once. Married man, strictly sober and steady; a hustler; can run shop to advantage; fully experienced in all branches of the trade. A Northern man but have been in Florida for two years. State full particulars and salary paid. Address "Hiram," Box 1703, Sarasota, Florida. 24-3t

Situation Wanted—By a first-class all-around mechanic and layout man on all kinds of sheet metal work. Experienced on cornice, skylight, furnace work, roofing, etc. Also on electric signs. Please state hours and wages. Married, sober and steady. Address C-17, care AMERICAN ARTISAN, 620 South Michigan Avenue, Chicago, Illinois. 1-3t

Situation Wanted—By first class tinner and furnace man. Can do inside and outside work. 25 years at the trade. Nothing but steady job the year around. Am married. Can do anything that comes in any tin shop. Address W. J. Mack, 37 East Main Street, Saint Charles, Illinois. 25-3t

SITUATION WANTED

Situation Wanted—By a good all around plumber, tinner, steamfitter and furnace man. Wants steady job with some hardware firm in a small town. Prefer combination shop or will rent shop where competition is not strong. Am first class combination man. At liberty after January 1st. Address X-97, care AMERICAN ARTISAN, 620 South Michigan Avenue, Chicago, Illinois. 22-3t

Situation Wanted—As salesman and director of furnace installations. Have a thorough knowledge of the business, having learned in the school of experience. Not afraid to don overalls and help with practical end if necessary. Address Q-5, care AMERICAN ARTISAN, 620 South Michigan Avenue, Chicago, Illinois. 24-3t

Situation Wanted—Stove salesman selling a line of gas ranges to hardware and furniture stores wants a line of stove-pipe and elbows to sell to above trade on commission basis for 1927. All references. Address C-12, care AMERICAN ARTISAN, 620 South Michigan Avenue, Chicago, Illinois. 25-3t

Situation Wanted—Sheet metal and furnace man will be open for position January 1st. Can do plumbing and heating. Can give A-1 references. Can take charge of work. Married. Only steady position considered. Address X-94, care AMERICAN ARTISAN, 620 South Michigan Avenue, Chicago, Illinois. 22-3t

Situation Wanted—As furnace installer in Wisconsin or northern Iowa. Can estimate and lay out job. Good references. Steady employment desired. Address C-11, care AMERICAN ARTISAN, 620 South Michigan Avenue, Chicago, Illinois. 25-3t

Situation Wanted—By first-class sheet metal worker and furnace man. 25 years' experience. Can also do plumbing. Address C-16, care AMERICAN ARTISAN, 620 South Michigan Avenue, Chicago, Illinois. 26-3t

Situation Wanted—By sheet metal worker and first-class furnace man in Iowa, Minnesota or Nebraska. 25 years' experience at the trade. Address C-19, care AMERICAN ARTISAN, 620 South Michigan Avenue, Chicago, Illinois. 1-3t

TINNERS' TOOLS

Wanted—To buy the following second hand tools—8 ft. cornice brake, 30 inch squaring shears, pipe folder, crimper with full set of beaders, circle shears, swaging machine, 36 inch groover, large burning machine, large turning machine, forming rolls, hollow mandrel stake. The above to be in good condition, will pay cash. Address L. E. Fothergill, 504 Grant Street, Sycamore, Illinois. 25-3t

Wanted—A used slip roll forming machine. Capacity 16 gauge and lighter, to take sheet 36 inches wide, 3-inch rolls and hand powered. Address X-93, care of AMERICAN ARTISAN, 620 South Michigan Avenue, Chicago. 1-3t

Wanted—To buy a good set of tinner's tools; state conditions of tools, give list of what you have and best cash price. Address Klenk Sheet Metal Works, 417 Fourth street, Defiance, Ohio. 26-3t

Wanted—Some good used tinner's tools; sufficient to equip a small shop. Must be cheap for cash. Address Charles Bruyn, Belvidere, Illinois. 26-3t

For Sale—Complete set of tinner's tools and stock. Good business. Address Q-7, care AMERICAN ARTISAN, 620 South Michigan Avenue, Chicago, Illinois. 24-3t

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24-3t

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With practical furnace selling experience needed to cover desirable sales territories in Nebraska with complete heating line. Only high grade men will be considered.

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19-3t

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25-2t

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by a Manufacturing Company of a High Class, Complete, Modern and Popular Line of Stoves. If you are a first class salesman here is an opportunity for a permanent position and good salary. Answer fully, giving details of experience, territory traveled, age and whether married. All answers will be treated confidentially. Address W-2, care AMERICAN ARTISAN, 620 South Michigan Avenue, Chicago, Illinois.

1-1t

SPECIAL NOTICES**SITUATION WANTED**

Young man who has held position as sales manager of a stove and furnace company and assistant sales manager of another large furnace company, will be available January 1st. Can furnish proof of his sales ability and is willing to prove this to you by actual contact with the trade. Age 30. Address W-1, care AMERICAN ARTISAN, 620 South Michigan Avenue, Chicago, Illinois.

24-3t

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Several good, live salesmen to sell complete unit "Furnace and Fan." Write us in full detail telling why you feel you can sell our line. All replies will be confidential. Our sales force knows of this ad. Address L-98, care AMERICAN ARTISAN, 620 South Michigan Avenue, Chicago, Illinois.

24-3t

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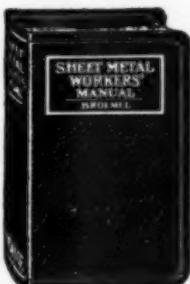
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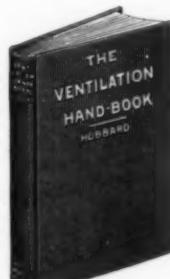
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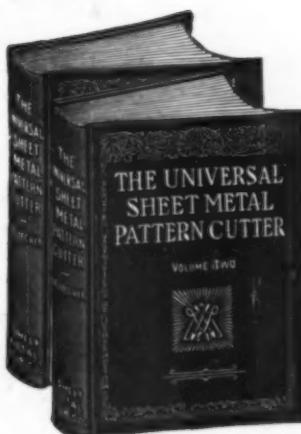
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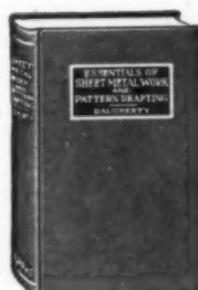
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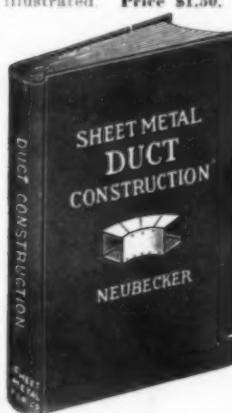
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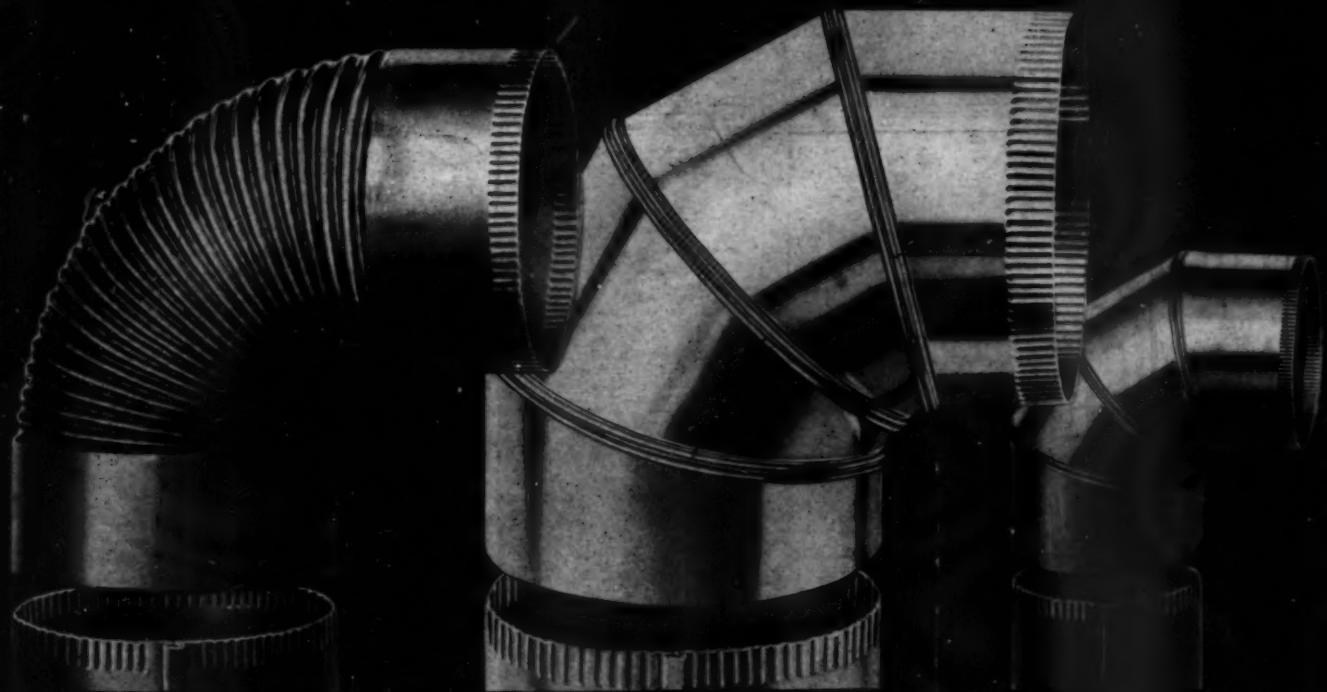
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